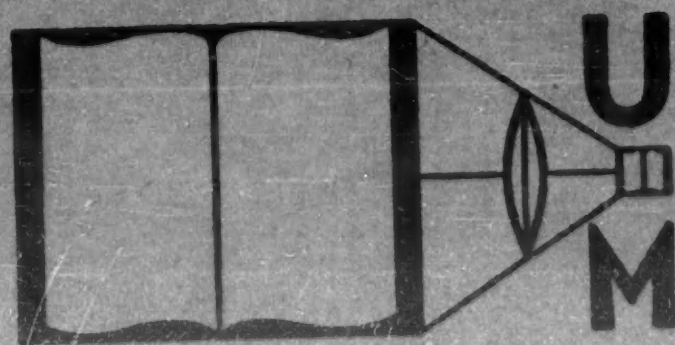


Vol. VI

No. 2

M I C R O F I L M
A B S T R A C T S

*A Collection of Abstracts of
Doctoral Dissertations and Monographs
Available in Complete Form
on Microfilm*





M I C R O F I L M
A B S T R A C T S

*A Collection of Abstracts of
Doctoral Dissertations and Monographs
Available in Complete Form
on Microfilm*

U N I V E R S I T Y M I C R O F I L M S

A N N A R B O R , 1 9 4 5

beginning with Vol ~~VI~~ no 2 ~~was~~

INTRODUCTION

In the past this publication has been devoted exclusively to abstracts of doctoral dissertations, available in complete form as microfilm or paper enlargements. ~~With this issue is~~ initiated a departure from this policy; the inclusion of abstracts of longer monographs of merit, in addition to dissertations.

The same conditions warranting microfilm publication of dissertations, namely size, expense of publishing through ordinary channels, delay in publication, and a limited but nonetheless important demand for copies, apply equally well to certain monographs of a specialized nature. Accordingly this and future issues will be divided into three sections instead of two, as in the past: 1) Abstracts of doctoral dissertations; 2) Abstracts of monographs (not dissertations); and, 3) A cumulative index of titles abstracted in preceding issues of Microfilm Abstracts. ||

In the case of dissertations the candidate's committee must approve the thesis as ready for publication, serving somewhat as a screen against poor scholarship and premature publication. Such control cannot be exercised in the case of monographs. This service is limited to accredited and mature scholars, each manuscript is presented and must stand on its own merits without further editing or inspection by University Microfilms.

While many are familiar with the salient points of microfilm publication, there are many more who are not, and for their information the following summary may be of interest.

1. The author submits a carefully typed first copy of the manuscript, ready for publication without corrections.

2. The author also submits an abstract of 700 words or less, accurately describing the contents of the manuscript, as a guide to it, but not as a substitute for it.
3. The manuscript is microfilmed, the negative carefully inspected, and put in vault storage.
4. The manuscript is catalogued by an expert, and this information sent to the Library of Congress, for printing and distribution of cards to depository catalogues and libraries.
5. The abstract is printed in the forthcoming issue of Microfilm Abstracts which is distributed without charge to leading libraries here and abroad, and to a selected list of journals and abstracting services. In this way each title becomes integrated into the bibliographical system of scholarship.
6. The charge for this service is \$15.00 irrespective of the size of the manuscript.
7. Anyone, after consulting the abstract and concluding the complete manuscript would be of value, can obtain a microfilm copy from University Microfilms at $1\frac{1}{4}$ per page.

This method separates the two necessary functions of publishing: notification, or the process of informing prospective users of the existence and contents of a manuscript and distribution, or the furnishing of a copy upon demand. Each of these functions pays its own way, since if no one wishes a copy the investment is small. However, if there is a demand, copies can be produced at current book rates.

Such is the plan back of Microfilm Abstracts. The service is available to any graduate school wishing to work with us on the publication of doctoral dissertations, or to any mature and qualified author of a monograph who wishes to publish in this way. Details will be gladly furnished upon request.

December 24, ~~1945~~

Eugene Power

1946

CONTENTS

Part I--DISSERTATIONS

AGRICULTURE

- A STUDY OF THE RELATION BETWEEN THE SUPPLY
OF POTASSIUM AND OTHER NUTRIENT ELEMENTS IN
SEVERAL MICHIGAN SOIL TYPES AND THE GROWTH
OF ALFALFA AND FIELD BEANS 1
Kirkpatrick Lawton

ART

- MANUAL OF SQUARE DANCING 4
Ira Zasloff

BACTERIOLOGY

- THE DISEASES OF NEWBORN LAMBS WITH SPECIAL
EMPHASIS ON BACTERIOPATHOLOGY 7
Ching-tuan Cheng
- A SYNTHETIC MEDIUM FOR MICROBIOLOGICAL ASSAY
OF RIBOFLAVIN, PANTOTHENIC ACID, BIOTIN,
NICOTINIC ACID, PYRIDOXINE AND POLIC ACID . . 10
Andrew M. Hyma

BIOLOGICAL CHEMISTRY

- VITAMINS REQUIRED BY SWINE 12
Vernon Flint McRoberts
- STUDIES OF THE PROTEINS OF THE TUNG NUT
(A. FORDII) 14
Hui-Lan Yeh

CHEMISTRY

- QUATERNARY AMMONIUM DERIVATIVES OF SUBSTITUTED
BENZYL DIMETHYL AMINES 16
William Hueckel Elliott

CHEMISTRY

- THE SYNTHESIS AND REACTIONS OF CERTAIN PARTIALLY HYDROGENATED BIPHENYLS 18

Richard Eugene Field

- MOLECULAR REARRANGEMENTS IN THREE CARBON SYSTEMS 20

Elizabeth MacGregor Hardy

- "THE EXTRACTION OF MAGNESIA FROM CALCINED DOLOMITES WITH CARBON DIOXIDE SOLUTIONS UNDER PRESSURE" 23

Frank Dudley Oldham

DRAMA, ENGLISH

- HEROIC PLAY ELEMENTS IN EARLIER ENGLISH DRAMA 27

Reverend Harold Francis Ryan, S.J.

ECONOMICS

- THE PHYSIOCRATS: A RE-EVALUATION 29

Thomas Patrick Neill

- INDUSTRY COUNCILS: AN ECONOMIC AND SOCIAL ANALYSIS OF THE MURRAY INDUSTRY COUNCIL PLAN 31

Brother Lambert Robert Shannon

EDUCATION

- THE SUPERVISION OF INSTRUCTION IN THE SECONDARY SCHOOLS OF THE DIOCESE OF BROOKLYN, NEW YORK. A SURVEY OF ITS ORGANIZATION AND TECHNIQUES, 1940-1941 33

Reverend John Francis Gilson, S.J.

- FEDERAL RELATIONS TO THE FIELD OF HIGHER EDUCATION 35

Ruth C. Mackaye

- PSYCHO-PHYSICAL TECHNIQUE FOR TEACHING RADIO-TELEGRAPHIC CODE TO BEGINNERS 38

Siegfried S. Meyers

EDUCATION

- "A CRITICAL ANALYSIS OF THE LEGAL FINDINGS
PERTAINING TO THE TEACHERS' TENURE OF OFFICE
ACT OF NEW JERSEY". (1909-1944) 43
Richard John O'Brien

- THE GRAPHIC METHOD OF TEACHING ARCHITECTURAL
DRAFTING IN SENIOR HIGH SCHOOLS, VOCATIONAL
AND ADULT SCHOOLS, AND TEACHER TRAINING IN-
STITUTIONS 46
J. Edgar Ray

- A PLAN FOR THE DEVELOPMENT OF A CURRICULUM
LABORATORY AT ST. LOUIS UNIVERSITY BASED ON
TEACHERS' NEEDS 49
Sister Mary Clela Zembrodt, O.S.B.

HISTORY

- THE FENIAN INVASIONS OF CANADA 51
Reverend Joseph Stanislaus Brusher, S.J.

LITERATURE, ENGLISH

- METHODOLOGY IN MILTON SOURCE STUDIES 53
George A. Gullette

LITERATURE, SPANISH

- A CRITICAL ANALYSIS OF THE NOVELS OF FERNAN
CABALLERO 56
Ainslie Burke Minor

MINERALOGY

- AN X-RAY AND SPECTROGRAPHIC STUDY OF LEAD
SULPHANTIMONITES 59
Frank C. Foley

PHILOSOPHY

- AN INQUIRY INTO THE FACTUAL BASIS OF HUMAN
KNOWLEDGE 60
Virgil Goodman Hinshaw, Jr.

PHYSICS

- THE SCATTERING OF POTASSIUM IONS NORMALLY INCIDENT ON A METAL SURFACE 63
Reverend Lawrence Joseph Monville, S.J.

PHYSIOLOGY

- CELL DIVISION IN RELATION TO EXCESSIVE FATIGUE 64
Everett Lyne
- ERYTHROCYTES AND HEMOSTASIS IN HEMOPHILIA-LIKE SWINE 68
Merle Edward Muhrer

POLITICAL SCIENCE

- PARLIAMENTARY PARTIES UNDER OLIVER CROMWELL . 71
Margaret Joy Tibbetts

SOCIOLOGY

- THE ADJUSTMENT OF THE INJURED UNDER THE MISSOURI WORKMEN'S COMPENSATION ACT 74
Sara R. Feder

ZOOLOGY

- RELATION BETWEEN SIZE AND AGE OF THE FOWL CLOACA, BURSA, AND GONADS WITH SPECIAL REFERENCE TO GROWTH AND STRUCTURAL VARIATIONS IN THEIR CONSTITUENT PARTS FROM HATCHING DATE TO SEXUAL MATURITY 77
Clare Helmer Bennett

Part II--MONOGRAPHS

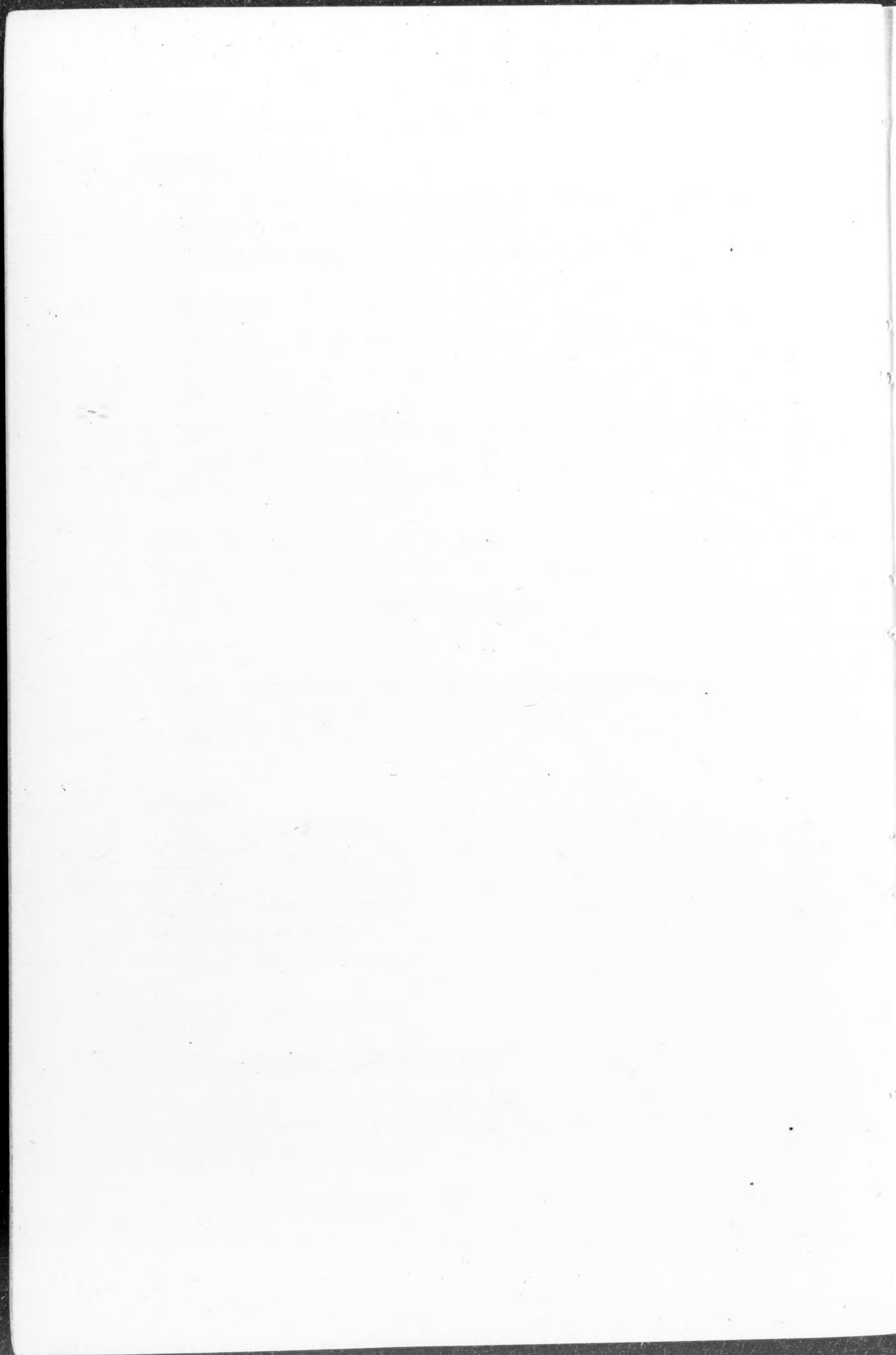
HUMAN ANATOMY--BIBLIOGRAPHY

- HETEROTAXY--A BIBLIOGRAPHY OF VISCERAL TRANSPOSITION (S.I.V.C.) IN MAN 81
Donald deF. Bauer

- Part III--CUMULATIVE INDEX 83

Part I

DISSERTATIONS



AGRICULTURE

A STUDY OF THE RELATION BETWEEN THE SUPPLY OF POTASSIUM AND OTHER NUTRIENT ELEMENTS IN SEVERAL MICHIGAN SOIL TYPES AND THE GROWTH OF ALFALFA AND FIELD BEANS

Kirkpatrick Lawton, Thesis (Ph. D.)
Michigan State College, 1945

This investigation was undertaken to study in detail through laboratory and greenhouse methods the supply of potassium and other nutrient elements in some Michigan soils which cause low yields and crop failures of alfalfa and field beans.

Soil and plant samples were collected from thirty-three good and poor alfalfa fields on twelve different soil types located in nine counties in western Michigan. These soils, with several exceptions, were sandy, low in organic matter, subject to drought, and low in base exchange capacity and available potassium.

Soils supporting good legume growth were significantly higher in exchangeable potassium, significantly higher in calcium, slightly higher in magnesium and available phosphorus, and higher in per cent base saturation and reaction than soils from poor fields. Seventy-five per cent base saturation may be regarded as the lower limit for good alfalfa growth provided there is an adequate supply of available potassium and other nutrients. The critical limit for exchangeable potassium falls between seventy-five and one hundred pounds per acre.

Alfalfa plants from locations of normal growth were considerably higher in potassium, lower in calcium and magnesium, and slightly lower in nitrogen than alfalfa from fields where crops were poor or the stand a failure.

Surface soil samples for greenhouse study were taken from eighteen poor and good alfalfa fields

representing seven soil types in western Michigan. Various nutrients were added to these soils including potassium, calcium, magnesium, phosphorus, boron, manganese, copper, zinc, and cobalt. Alfalfa was planted in glazed jars and several cuttings were removed from the first, and in some cases the second stand. Block or split plot designs with four replications were used. The yields of tops and roots were analyzed statistically.

Alfalfa growth was most significantly increased with potassium, especially in the second stand. Applications of lime had little effect on yield even though the reaction of some soils was below pH 5.8. Magnesium gave a significant response in yield in four out of eleven experiments. Except in one trial phosphorus had a depressing effect on growth. Boron produced significant increases in yield in twelve out of eighteen experiments, where it especially stimulated root growth. Alfalfa responded in yield in about half of the trials where manganese or zinc or cobalt was applied together with other nutrients. Combinations of copper and manganese, and copper and cobalt were beneficial for legume growth in several experiments.

Upon observation of severe potash deficiency symptoms on field beans in the Thumb area and Saginaw Valley of Michigan in 1941, a study was conducted whereby samples of normal and deficient plants and soils were collected and analyzed. Potassium starvation occurred when the exchangeable potassium of the soil fell below one hundred pounds per acre. Normal beans contained almost three times as much potash as deficient plants.

Several laboratory investigations were carried out to determine the potassium supplying and fixing powers of soils collected from the field. The main source of soil potassium in sandy soils for plant growth is the acid soluble fraction, which is in equilibrium with the more available forms. These soils do not release or fix sufficient potassium

reserves to establish or maintain legumes and must be given frequent additions of potassium over the life of the stand.

Publication No. 722

Microfilm copy of complete manuscript 148 pages
at 1 1/4 cents, total cost \$1.85, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3372

ART

MANUAL OF SQUARE DANCING

Ira Zasloff, Thesis (Ed. D.)
New York University, 1944

The Problem

The problem was to prepare a manual on square dancing.

The Need for the Manual

People have danced forever and people will dance forever. The American people have taken the dances brought to this country by their forefathers and fashioned them into dances typical of America and of Americans.

The square dance is returning to use by those who danced in the past and this activity is drawing many newcomers to its fold. This spread of square dancing has given cause for its inclusion in the recreation programs for some colleges, Armed Forces members, churches, social groups, home groups, community centers, and civic organizations.

There has been created a need for leadership versed in methods and materials in square dance and this manual is directed to answer this need.

Procedures

The procedures were concerned with the collection, classification, and integration of material for the elements of the problem and the arrangement of the resulting material into the final form of the manual. Background material of square dancing was found in libraries and in books on folklore. The folklore historian has made an excellent contribution to the record of this art.

Personal experience aided in this study. This experience included courses in methods and materials in the subject at New York University; calling square dances for various groups, dancing

the square dances called by experts, as well as observing the callers at their work.

The visual aids used to illustrate the manual were accomplished by photographing figures as they were moved about to illustrate the patterns and movements in square dancing.

The Manual

The rich, creative forces of America produced the American Square Dance. This form of dance reflects the American way of living wherein each dancer makes a definite contribution to the effort of his group. The satisfaction felt as a result of taking part in a communal activity, in which skills are easily learned, is the product of an ideal recreation situation for the young and the old.

The Use of the Manual

The 'calls' in the manual are arranged in a double page spread and when reading across the double page the reader will find the 'Calls', the 'Procedures', and the visual aids. This horizontal arrangement across the double page permits separation of a 'call', or part of a 'call', from the preceding or following material related to the entire square dance element.

It is possible for a beginner in square dance, acting as caller, to guide four couples through these elements by reading to them the 'calls' and 'procedures' and to correct any errors the dancers make by comparing their movements with the pictures of the visual aids. This possibility is heightened by three simple square dances for beginners. The caller is aided by the addition of 'patter', or 'rhymes', to the 'calls' and reference notes aid in the explanation of the 'calls' in square dance books.

The Appendix

The appendix contains a bibliography used for the manual. This is followed by a questionnaire used to classify the elements of square dancing from the simple to the complex. This classification was

accomplished through the services of a jury of three experts in square dance. The resulting arrangements follow in composite form. This arrangement was based on the ratings given each element by the jurors.

The glossary of 'calls' and 'synonymous calls' coupled with the index completely cross-check all material in the manual. Definitions, explanations, and visual aids are contained in the manual and where definition is needed in this section it is included.

Publication No. 694

Microfilm copy of complete manuscript 191 pages
at 1 1/4 cents, total cost \$2.39, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5316

BACTERIOLOGY

THE DISEASES OF NEWBORN LAMBS WITH SPECIAL EMPHASIS ON BACTERIOPATHOLOGY

Ching-tuan Cheng, Thesis (Ph. D.)
Michigan State College, 1945

Fifty-five newborn lambs affected with a variety of diseases were included in this study and the problem was attacked hematologically, bacteriologically and pathologically.

The hematological investigation consisted of studying the blood from both normal sheep and pathological lambs. The blood values obtained from normal sheep served as a control. The results were briefly summarized in three tables and discussed in detail in connection with the individual cases. The average blood values of normal lambs were--red blood cells 10,444,286 per cmm., hemoglobin 10.9 gm. per 100 cc., white blood cells 7,979 per cmm. with differential count of 28% neutrophils, 70% lymphocytes, 1% monocytes and 1% eosinophils, while those of normal ewes were--red blood cells 8,607,000 per cmm., hemoglobin 10.08 gm. per 100 cc., white blood cells 8,263 with differential count of 30% neutrophils, 65.25% lymphocytes, 1% monocytes and 4% eosinophils.

In the bacteriological studies, 41 cultures of aerobes and 7 anerobes were isolated from various cases. By means of morphological, biochemical, and pathogenicity tests, these cultures were identified and grouped under 9 genera. They were--Staphylococcus, Diplococcus, Neisseria, Escherichia, Bacterium, Pasteurella, Corynebacterium, Actinomyces and Clostridium. Two cultures were undetermined. Twenty (48.78%) of the 41 original aerobic cultures were recovered from inoculated mice, 13 (31.7%) of which were definitely virulent. Rabbits were found to be quite resistant to the cultures and were not suitable for pathogenicity tests.

As a result of pathological and bacteriological studies, 15 different diseases were diagnosed, namely, white muscle disease, staphylococcic infection, navel infection, docking infection, castration wound, broncho-pneumonia, pasteurellosis, enterotoxemia, meningitis, peritonitis, enteritis, gastric ulceration and perforation, dietary deficiency, congenital anomalies, and an undetermined group. Most of these diseases were studied more or less in detail and a number of conditions such as congenital interstitial broncho-pneumonia, patent ductus arteriosus, patent foramen ovale, gastric ulcers and perforation, and encephalomalacia were reported for the first time.

The histopathology of white muscle disease in lambs was studied in detail. The finding of muscle giant cells (skeletal and cardiac) in the cases of white muscle disease and their significance in myo-regeneration are considered new to medical science and of vital importance in explaining the pathological phenomena involved. The specific function of the muscle giant cells and the modes of their formation were fully discussed. Their function is to remove the dead muscle fibers, and they were formed either by fusion or by nuclear proliferation without cytoplasmic division.

The cardiac muscle was observed to possess the capacity for regeneration, and this is also considered new to medical science.

The nature and origin of the so-called "anitschkow myocyte" and "Aschoff cell" were fully discussed and evidence was given bearing on the position of these cells in the myocardium. In short, "Anitschkow myocyte" was found to simulate very much the regenerating cardiac muscle cells and the "Aschoff cell" the cardiac muscle giant cells.

The fancy and peculiar terms such as "repair clubs of muscle", "multinucleated syncytial masses", "large multinucleated plasmatic masses", "syncytial sprouts with multiple nuclei", "cytoplasmic syncytium with a large number of nuclei", and "multinucleated

cells in muscle" were explained and designated as synonyms of either skeletal or cardiac muscle giant cells.

The nature and the origin of the so-called "muskelzellenschlauche" of Waldeyer was discussed in detail. This term designates a group of regenerating skeletal muscle cells together with one or more muscle giant cells.

The nature and origin of the so-called "Aschoff body" was discussed. This body is probably a mass of regenerating cardiac muscle cells together with one or more cardiac muscle giant cells.

A brief and concise statement was given concerning the pathological processes involved in muscular disturbances. The processes involved are designated as "myo-inflammation and scar-tissue repair" for tissue reaction to a severe injury and "myo-degeneration and myo-regeneration" for tissue reaction toward a mild injury.

A new technic of opening the cranial cavity for brain examination was described. This was done by making a frontal section through an imaginary line, passing through nasal cavities, floor of orbits and about half an inch above the ears until it reached the occipital region of the skull. Then, by gentle tipping and with the help of the blunt tip of a pair of scissors, a greater part of the brain (the entire cerebrum) was slipped out of the upper half of the skull and exposed, leaving the cerebellum and medulla oblongata in the lower half.

The nature of the various diseases of newborn lambs was stressed, and suggestions were made for the control of some of the more important conditions.

Publication No. 702

Microfilm copy of complete manuscript 259 pages
at 1 1/4 cents, total cost \$3.24, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3375

A SYNTHETIC MEDIUM FOR MICROBIOLOGICAL ASSAY OF
RIBOFLAVIN, PANTOTHENIC ACID, BIOTIN, NICOTINIC
ACID, PYRIDOXINE AND POLIC ACID

Andrew M. Hyma, Thesis (Ph. D.)
Michigan State College, 1945

The variables of casein hydrolysate in microbiological assay media were removed by the use of pure amino acids for the growth requirement of L. arabinosus and L. casei. Detailed studies were made on the minimum number and quantities of amino acids essential for growth of these organisms. In using L. arabinosus it was found that the following nine amino acids: tryptophane, cystine, glutamic acid, arginine, tyrosine, leucine, iso leucine, threonine and valine produced a good growth. The practical use of this medium for the assay of biotin, nicotinic acid and pantothenic acid was demonstrated with L. arabinosus as test organism. L. casei was more fastidious, and required in addition to the above amino acids factors present in yeast as biotin and folic acid. On addition of these factors L. casei gave consistent results on the assay of six factors of B complex vitamins as riboflavin, pantothenic acid, pyridoxine, nicotinic acid, biotin and folic acid. A mixture of all the amino acids, as occurring in casein hydrolysate, is recommended in order to balance oxidation and reduction reactions between pairs of amino acids because an absolute distinction cannot be maintained between H donating and H accepting amino acids. These amino acids in the quantities shown plus the purine and pyrimidine bases are thoroughly mixed in a desired amount and may be stored in amber bottles without apparent depreciation. The amount necessary for media preparation may be weighed from this mixture when and as required. In the use of this mixture the variables present in casein

hydrolysate and yeast supplement are removed and consistent results are obtained. Studies were made on the effect of added carbohydrates, such as mannose, galactose, and inositol, as well as nucleic acid and para amino benzoic acid. The anti vitamin activity of methione also was investigated. The medium is of known chemical composition and results are more reproducible and the procedure greatly simplified.

Publication No. 728

Microfilm copy of complete manuscript 49 pages
at 1 1/4 cents, total cost \$.61, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5309

BIOLOGICAL CHEMISTRY

VITAMINS REQUIRED BY SWINE

Vernon Flint McRoberts, Thesis (Ph. D.)
University of Missouri, 1943

The pigs were separated from their dams and placed on simplified diets at two days of age. The composition of the basal ration, in per cent, was casein 30, sucrose 30, starch 5, lard 30, and salt mixture 5. The amounts of added vitamins, per 100 grams of food, were, in mg., thiamine 0.8, riboflavin 1.6, pyridoxine 1.2, ca-pantothenate 2.0, nicotinic acid 2-4, choline 200-300, alpha-tocopherol 4, vitamin K₃ 2.0; in I.U., vitamin A 3000, vitamin D 850. The mixture was dissolved, or emulsified, in about four times its weight of water.

Pigs that received the basal diet developed severe diarrhea within 24 hours. Most of them recovered from this disorder within a week, but some never recovered. A few grew fairly well for from 2 to 5 weeks, but with few exceptions they then developed diarrhea again, became rough and unthrifty, reduced their consumption of food, and grew at a slower rate. Some developed a brown sticky exudate around the eyes and mouth and on the inside of the legs. If the diet was not improved, the symptoms became more severe and the pigs eventually died. No characteristic abnormalities were found at autopsy. In a few cases necrotic and inflamed areas were found in the intestinal tract, and occasionally pneumonia or peritonitis was the immediate cause of death.

It was evident that the basal ration was seriously deficient and attempts were made to improve it by adding the following vitamins (quantities are Mg. per 100 grams of food): Ascorbic acid 30, inositol 30, biotin 0.03, and p-aminobenzoic acid 30. None of these vitamins improved the diet and it was

concluded that they are not required by the pig or else some unrecognized vitamin is the first limiting factor. When choline and vitamins E and K were omitted from the diet the pigs did as well as when they were included. It may be impossible to decide which of the recognized vitamins are indispensable until all the essential unrecognized vitamins become available.

When it became apparent that the basal diet was inadequate it was assumed as a tentative hypothesis that it was deficient in at least one unrecognized vitamin and a variety of crude vitamin carriers was added to the diet. Water extracts of liver and of yeast were used most extensively. The liver extracts seemed to be more effective than those prepared from yeast, but when either was included in the diet diarrhea disappeared, food intake and rate of growth increased, and there was a marked improvement in appearance. A short time trial indicated that the active agent in liver could be adsorbed on fuller's earth and eluted. Three pigs received a combination of extracts from the time they were 2 days old and they grew as well and were as normal in appearance as were control pigs which received fortified cow's milk. These results strongly support the assumption that the basal diet was deficient in an unrecognized vitamin. The pigs grew well when the diet was made adequate and the failures were not due to disease. Water extracts of yeast, or of liver, contain all unrecognized vitamins required by the pig.

Publication No. 719

Microfilm copy of complete manuscript 77 pages
at 1 1/4 cents, total cost \$.96, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3381

STUDIES OF THE PROTEINS OF
THE TUNG NUT (A. FORDII)

Hui-Lan Yeh, Thesis (Ph. D.)
University of Michigan, 1945

Two protein fractions, globulin and albumin, were isolated from defatted tung nut meal (Aleurites fordii, grown in Louisiana). "Globulin" is defined as that fraction of the sodium chloride extract (10 per cent sodium chloride) which was precipitated on removal of the salt by dialysis. "Albumin" is defined as that fraction which was coagulated by heat at approximately neutral reaction after the removal of the globulin.

The average nitrogen content of the globulin and albumin fractions were 17.5 per cent and 14.3 per cent, and the sulfur contents were 1.75 per cent and 0.79 per cent, respectively.

Nine amino acids (threonine, serine, cystine, methionine, arginine, tryptophane, tyrosine, histidine, phenylalanine) were determined in the acid hydrolysates of these two protein fractions. The nitrogen present in these acids totaled 44 and 35 per cent of the total nitrogen of the globulin and albumin, respectively. The methionine and cystine sulfur accounted for 97 per cent of the total sulfur of the globulin and for 101 per cent in the case of the albumin. The percentage of arginine in the globulin hydrolysate was high (approximately 25 per cent of the total nitrogen), a value similar to that previously observed in arachin, the globulin of the peanut. The analyses of the albumin fraction were distinctly different from those of the globulin.

The digestibilities of these proteins in vitro by the gastro-intestinal enzymes were slightly

lower than those of many of the seed proteins, i.e., globulin 82.4 per cent and albumin 73.4 per cent.

Publication No. 704

Microfilm copy of complete manuscript 202 pages
at 1 1/4 cents, total cost \$2.53, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5306

CHEMISTRY

QUATERNARY AMMONIUM DERIVATIVES OF SUBSTITUTED BENZYL DIMETHYL AMINES

William Hueckel Elliott, Thesis (Ph. D.)
St. Louis University, 1944

An exhaustive survey of the chemical literature indicates that the quaternary ammonium molecule of optimum bactericidal activity is one containing an aromatic nucleus, such as a benzyl group, and a long aliphatic chain of about twelve carbons. Also highly bactericidal are the phenols and their derivatives. It was the purpose of this research to prepare quaternary ammonium derivatives in which the benzyl group was further substituted with phenolic hydroxyl groups and their derivatives.

The immediate problem was the preparation of the tertiary amines. This was done by a modification of the Leuckart reaction. This appears to be the first comprehensive study of the Leuckart reaction, involving a reaction between aromatic aldehydes and dimethyl formamide. The dimethyl formamide used was found to be a previously unreported azeotrope containing 26.86% of free formic acid. Optimum conditions of the reaction were shown to be four hours heating at 165-85°C. (oil bath temperature). The addition of formic acid during the course of the reaction, as advocated by Nabenhauer, was shown to be definitely detrimental.

The reaction was extended to o,-m-, and p-methoxy benzaldehydes and 2,4-dimethoxy and p-benzyl-oxy benzaldehydes. Yields of tertiary amines varied from 61 to 83%. In general the reaction was unsuccessful with the hydroxy benzaldehydes, although salicylaldehyde underwent the reaction to a small extent.

Attempts to apply the reaction to the acetoxy benzaldehydes were unsuccessful because hydrolysis

preceded the Leuckart reaction.

The hydroxy benzyl dimethyl amines were prepared by hydrolysis of the methoxy ethers, using concentrated hydriodic acid or hydrobromic acid. This hydrolysis could not be carried out with the 2,4-dimethoxy benzyl dimethyl amine, because the reaction followed some other course.

The tertiary amines were coupled with lauryl iodide, but the products were low melting solids that have resisted all attempts to crystallize them. They are, however, surface-active agents.

Methiodide and hydrochloride derivatives of the tertiary amines were analyzed for nitrogen by the micro Dumas method, thus leaving no doubt as to the structure of these amines.

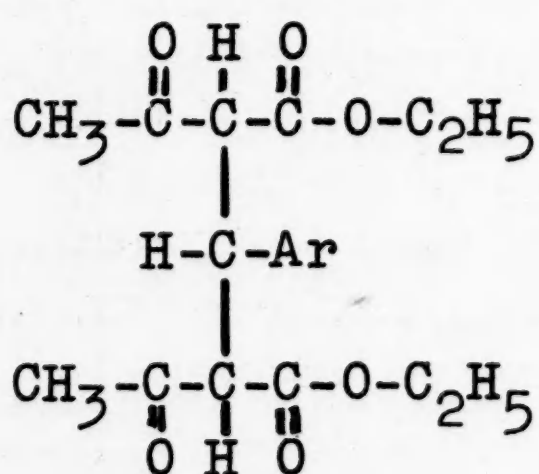
Publication No. 762

Microfilm copy of complete manuscript 146 pages
at 1 1/4 cents, total cost \$1.83, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3382

THE SYNTHESIS AND REACTIONS OF CERTAIN PARTIALLY HYDROGENATED BIPHENYLS

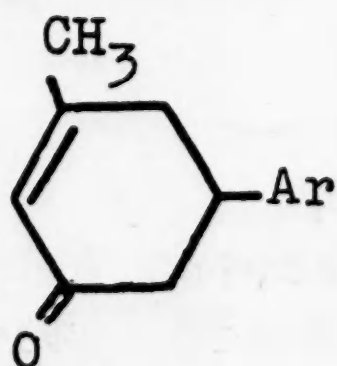
Richard Eugene Field, Thesis (Ph. D.)
University of Michigan, 1945

This thesis describes an investigation following the route first developed by Knoevenagel for the preparation of partially hydrogenated biphenyl derivatives containing one alicyclic and one aromatic ring. For this purpose one mole of an aromatic aldehyde is condensed with two moles of ethyl acetoacetate in the presence of a secondary amine, such as piperidine or diethyl amine. The product isolated from this reaction is ethyl α, α' -diacetyl- β -arylglutarate, A. This may be cyclized to 3-methyl-5-aryl-4,6-dicarboethoxy-2-cyclohexen-1-one, B. Both ester groups of B may be removed to give 3-methyl-5-aryl-2-cyclohexen-1-one, C.



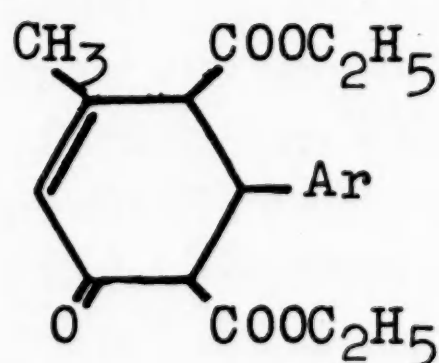
A

Ethyl α, α' -diacetyl- β -arylglutarate



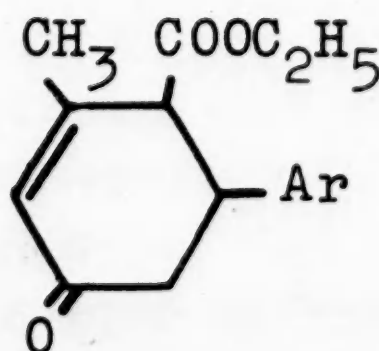
C

3-Methyl-5-aryl-2-cyclohexen-1-one



B

3-Methyl-5-aryl-4,6-dicarboethoxy-2-cyclohexen-1-one



D

3-Methyl-5-aryl-4-carboethoxy-2-cyclohexen-1-one

In this investigation a new method was developed for the cyclization to obtain B, and an improved method for obtaining the ketone C, from the cyclized di-ester B, was developed. The latter process involved an ester-interchange reaction. These reactions were used to obtain the series of compounds derived from p-methoxybenzaldehyde, from 2,3-dimethoxybenzaldehyde and from m-tolualdehyde. It was found that the results were not entirely satisfactory for the compounds derived from o-methoxybenzaldehyde.

Previous work with aliphatic aldehydes had shown that the 6-carbethoxy group could be selectively removed to obtain compounds of type D with a 5-alkyl substituent. It was found that this type of compound could not be obtained when dealing with aryl substituents, but a new method was found for the preparation of a compound of this structure. Anisalacetone was condensed with one mole of ethyl acetoacetate in a Michael reaction to give ethyl α , α -diacetyl- β -arylbutyrate. This was cyclized to give 3-methyl-5-aryl-4-carbethoxy-2-cyclohexen-1-one.

Methods were investigated by which the alicyclic ring could be hydrogenated catalytically, using palladium-charcoal, to obtain a hexahydrobiphenyl. Biphenyl derivatives were obtained through dehydrogenation of the alicyclic ring, and several other reactions of 3-methyl-5-aryl-2-cyclohexen-1-one were investigated.

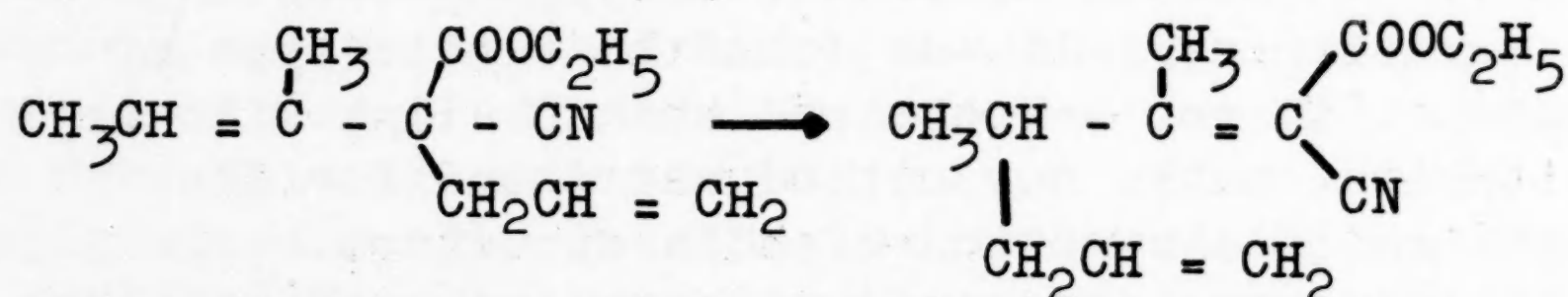
Publication No. 699

Microfilm copy of complete manuscript 70 pages
at 1 1/4 cents, total cost \$.88, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3377

MOLECULAR REARRANGEMENTS IN THREE CARBON SYSTEMS

Elizabeth MacGregor Hardy, Thesis (Ph. D.)
Bryn Mawr College, 1942

It has been shown¹ that an allyl group will migrate in a three-carbon system if it is attached to a carbon atom which is activated by being attached to two strongly electron attracting groups such as -CN and -COOC₂H₅.



This rearrangement is analogous to the Claisen rearrangement of phenyl allyl ethers to o-allyl phenols².

The first part of this dissertation is concerned with a study of the mechanism of the rearrangement in a three-carbon system. It has already been shown that the rearrangement is a first order reaction¹ and that the allyl group undergoes inversion.³ By rearranging two esters in admixture, one of which contains an allyl group and the other a substituted allyl group and determining whether there is an interchange of groups between the two esters, the inter- or intramolecular nature of the rearrangement can be determined. The two esters used, however, must rearrange at similar rates so that there will be an

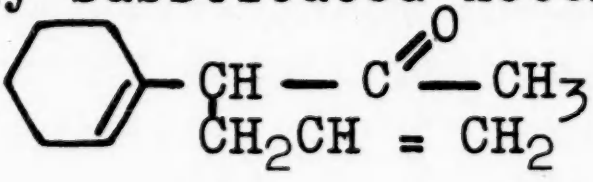
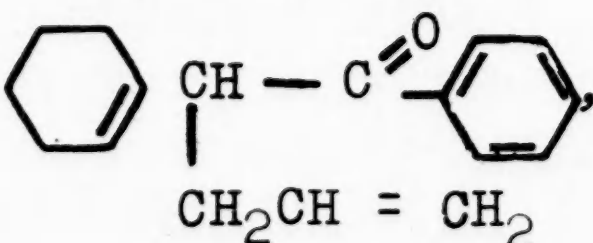
¹ (a) Cope and Hardy, J. Am. Chem. Soc. 62, 441 (1940)
(b) Cope, Hoyle and Heyl, *ibid.* 63, 1843 (1941).

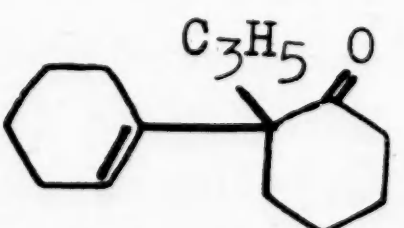
² Claisen, Ber. 45, 3157 (1912).

³ Cope, Hofmann and Hardy, J. Am. Chem. Soc. 63, 1852 (1941).

opportunity for an exchange of groups. As all attempts to prepare esters rearranging to products which could be separated by chemical means were unsuccessful, esters were chosen which rearranged to esters with boiling points sufficiently different to allow separation by distillation. By rearranging in admixture ethyl (1-methyl 1-hexenyl)-allylcyanoacetate and ethyl isopropenyl-crotylmalonate and also ethyl (1-methyl 1-hexenyl)-allylcyanoacetate with ethyl (1-methyl 1-propenyl)-crotylcyanoacetate it was found that the rearrangement is intramolecular as no interchange of groups between the esters occurred.

The second part of this dissertation describes work undertaken to determine whether or not a single carbonyl group attached to the alpha carbon atom would be sufficient to activate the system for an alpha-gamma shift of an allyl group; that is, to determine whether suitably substituted ketones will undergo the rearrangement which has been found general for cyanoacetic and malonic esters and malononitriles.

Three suitably substituted ketones, allyl cyclohexenyl acetone, , allyl cyclohexenyl acetophenone, , and allyl

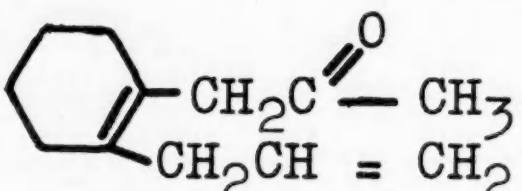
cyclohexenyl cyclohexanone,  were prepared.

The allyl derivatives were prepared by alkylation of the sodium derivatives of cyclohexenyl acetone, cyclohexenyl acetophenone and cyclohexenyl cyclohexanone. Unsuccessful attempts were made to prepare other ketones suitable for the study of the rearrangement.

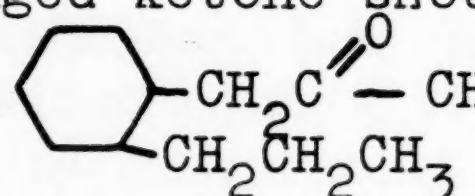
The three ketones were rearranged by heating at 170-180°C. in an atmosphere of nitrogen until successive distillations indicated no further change in the refractive index of the distillate. In each case isomeric rearrangement products were isolated

differing in physical properties from the starting material and yielding different semicarbazone derivatives.

In the case of allyl cyclohexenyl acetone the expected rearrangement product would be 2-allyl cyclo-

hexenyl acetone,  if the rearrange-

ment were similar to the other rearrangements. The reduction of this rearranged ketone should yield 2-

propyl cyclohexylacetone, . This sat-

urated ketone was prepared by the action of methyl magnesium iodide on the corresponding nitrile. The ketone synthesized in this manner was not identical with the reduced rearranged ketone, as shown by the melting points and mixed melting points of the semicarbazone derivatives. However, the structures of these ketones permit the existence of geometrical and optical isomers. Such isomerism may account for the fact that the synthetic ketone and the reduction product of the rearranged ketone are not identical.

Publication No. 723

Microfilm copy of complete manuscript 76 pages
 at 1 1/4 cents, total cost \$.95, paper
 enlargements 6" x 8", at 10¢ per page. Available
 from University Microfilms, Ann Arbor, Mich.
 Library of Congress Card Number A44-3380

"THE EXTRACTION OF MAGNESIA FROM
CALCINED DOLOMITES WITH CARBON
DIOXIDE SOLUTIONS UNDER PRESSURE"

Frank Dudley Oldham, Thesis (Ph. D.)
University of Missouri, 1944

The present work was undertaken to obtain basic information about extracting magnesia from dolomite and dolomitic limestones. For several reasons, aqueous carbon dioxide was chosen for the extracting reagent. It was known that commercial operations using the same reagent had long been in practice, but their details were secret.

Essentially, the process investigated consists in calcining the magnesia-bearing rock, leaching the product with aqueous carbon dioxide to dissolve its magnesia content, filtering from the insoluble residue, and heating the filtrate to expel carbon dioxide and to precipitate a carbonate of magnesium for calcination to oxide.

The specific aims of the investigation were to answer five questions concerned with (1) the purity of the magnesia obtainable by reasonably simple processing, (2) the pressure-temperature-solubility relations in the system $\text{MgO-CO}_2\text{-H}_2\text{O}$, (3) the rates of solution achievable, (4) the feasibility of using common and rather impure raw materials, and (5) the effect of selectively calcining the raw material to $\text{MgO}\cdot\text{CaCO}_3$ rather than completely calcining to $\text{MgO}\cdot\text{CaO}$.

Extractions were carried out in a pressure vessel with an internal stirrer. Temperature control was maintained by circulating water from a constant-temperature bath. Samples were filtered before pressure was released, and all effervescing carbon dioxide and water vapor were trapped.

It was found that high-grade magnesia can be obtained by the simple steps outlined above. Magnesia of low ferric oxide content (0.20% and below) can be prepared even from dolomites of fairly high iron content. With low-iron raw materials, especially when completely calcined, magnesia very nearly iron-free can be prepared.

Magnesia of low calcium oxide content (0.30% and below) can be prepared, but more work is needed to make clear just how various factors influence this contamination.

Magnesia of low silica content (0.05% and below) can be prepared even from high-silica dolomites if completely calcined. High-silica dolomites only selectively calcined yield values of around 0.20% for silica contamination.

The pressure-temperature-solubility relations found in this work show good internal consistency, but do not agree as well with any of the generally contradictory values from the literature. For carbon dioxide pressures above one atmosphere, the solubility values of this work exceed any of those found in the literature. In addition to normal, stable solubility values, this work reveals some supersolubility values for both magnesia and carbon dioxide. Simple empirical equations are given to relate solubilities at 25°C. to pressures of carbon dioxide.

Solubility values of magnesia at 25°C. are high enough to justify operating at this temperature or even somewhat above, making refrigeration unnecessary. For example, at 25°C. and six atmospheres carbon dioxide pressure, a solution two per cent by weight of magnesia is obtained. The quoted value falls only to one per cent at 1.34 atmospheres, and rises to three per cent at 18 atmospheres (to over four per cent for the unstable supersolubility value).

Molar ratios of carbon dioxide to magnesia in solution are always greater than two, for the pressures used. At 25°C. the ratio varies from 2.04 to 2.59 as the carbon dioxide pressure varies from 1.34 to 63.5 atmospheres.

Solubilities of both magnesia and carbon dioxide decrease sharply with rise in temperature at constant pressure. Much of the carbon dioxide is released on heating and could be returned to the leaching vessels without recompression. The quantity of carbon dioxide so recoverable was not determined.

For extraction of 90% of available (see below) magnesia, a period of 30 minutes or less would be ample for simple batch operation. For a counter-current, continuous extraction it might be possible to reduce the time to less than five minutes, especially if selectively calcined materials were used. The same results might be obtained with completely calcined materials if the formation of stiff pastes were prevented. Very fine grinding appears unnecessary.

Ordinary dolomitic limestones containing much silica and iron oxide can be used to yield high-grade magnesia (see passages above dealing with impurities). One-third of the total magnesia content of the dolomitic limestone used was unavailable to extraction, but such unavailability was not encountered with the low-silica crystalline dolomites.

The use of selectively calcined materials (essentially $\text{MgO} \cdot \text{CaCO}_3$) has the definite advantage that stiff, pasty residues are not obtained. Filtration is easier and rates of extraction are more rapid. Complete calcination gives lower ferric oxide and silica contaminations. The effect of mode of calcination upon calcium oxide contamination is not clearly demonstrated.

The findings of the present investigation are favorable for the extraction of high-grade magnesia from dolomite and dolomitic limestone. A continuous extraction might be feasible, especially if complete calcination of raw materials were avoided.

To permit minimum total pressure for desired carbon dioxide partial pressure, it might be advisable to use pure carbon dioxide. Part of the gas

consumed in the extraction can be recovered pure and at high pressure, by heating the bicarbonate solution under pressure. The precipitated basic carbonates can be converted to oxide in an externally fired kiln, since magnesium carbonate dissociates at 350°C. Such kilns can yield pure carbon dioxide. Thus, the gas in the process can be recycled and only incidental losses need be supplied.

Further investigation and development are warranted.

Publication No. 729

Microfilm copy of complete manuscript 83 pages
at 1 1/4 cents, total cost \$1.04, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5308

DRAMA, ENGLISH

HEROIC PLAY ELEMENTS IN EARLIER ENGLISH DRAMA

Reverend Harold Francis Ryan, S.J., Thesis (Ph. D.)
St. Louis University, 1944

The presence in Elizabethan and Jacobean drama of elements similar to the distinguishing features of the Restoration heroic play has been frequently asserted by critics. The validity of such assertions can be tested by comparing the heroic play's specific qualities of plot, characterization, and sentiment with the corresponding elements of the earlier drama.

In general, the characteristic elements of a typical Restoration heroic play (e.g., The Conquest of Granada) are: a plot composed of an episodic series of events closely connected with an important military campaign, and usually terminating happily for the hero and the heroine; stereotyped and conventional characters portrayed with heightened contrast; sentiments almost exclusively restricted to love and honor.

An examination of English drama from 1585 to 1625 shows that similarities to elements peculiar to the Restoration heroic play are there present in both major and minor plays, including Shakespeare. Especially significant similarities are found in the work of Beaumont and Fletcher. With their remarkable theatrical skill, these dramatists developed a type of romantic drama, based largely on Elizabethan and Jacobean materials, which is comparable to the Restoration heroic play.

The similarities between the earlier drama and the Restoration heroic play indicated by this

investigation show that the critics who affirm the presence of native elements are justified in their assertions.

Publication No. 766

Microfilm copy of complete manuscript 366 pages
at 1 1/4 cents, total cost \$4.58, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5307

ECONOMICS

THE PHYSIOCRATS: A RE-EVALUATION

Thomas Patrick Neill, Thesis (Ph. D.)
St. Louis University, 1943

The Physiocrats were a group of pre-revolutionary French social philosophers who came to be famous as "the first modern school of economic theory." Physiocratic theory has long been known to the world chiefly through the writings of Adam Smith and Jean-Baptiste Say and their followers. The revival of interest during the nineteenth century in the history of economic theory resulted in numerous studies of the Physiocrats. These studies, conducted by nineteenth-century economists, stressed the "modernity" of physiocratic economic theory at the expense of a correct understanding of the ensemble of their doctrines.

Max Beer took the first step toward a re-evaluation of the Physiocrats when he published his Inquiry into Physiocracy, in which he stressed the similarity between their economics and that of the Scholastic tradition, as found particularly in Aristotle and Saint Thomas Aquinas. Beer, however, treats the Physiocrats only as economists and makes no attempt to inquire into the more basic points of their system and the relation of economics to the completed body of their thought.

The purpose of this dissertation is to place the Physiocrats in their setting and to determine as precisely as possible the content of their system of thought, and to discover the sources of their theories. Reliance is placed primarily on the writings of the Physiocrats themselves and secondarily on the opinions of their contemporaries as to the meaning of their doctrines. The physiocratic theory of natural law, on which they based their economics, has been

thoroughly examined for the first time in an attempt to determine exactly what estimate the Physiocrats placed upon their own theories and to account for the misunderstanding that arose almost at once concerning both the meaning and the historical importance of physiocracy.

Publication No. 765

Microfilm copy of complete manuscript 358 pages
at 1 1/4 cents, total cost \$4.48, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5304

INDUSTRY COUNCILS: AN ECONOMIC AND
SOCIAL ANALYSIS OF THE MURRAY IN-
DUSTRY COUNCIL PLAN

Brother Lambert Robert Shannon, Thesis (Ph. D.)
St. Louis University, 1944

In December, 1940, Mr. Philip Murray, President of the Congress of Industrial Organizations, submitted to the President of the United States a plan for the inauguration of a series of Industry Councils in our country, in order to enhance and improve the defense program.

This proposal of Murray's called for the establishment of an Industry Council in every basic and vital defense industry, which would consist of an equal number of representatives of labor and of management, under the chairmanship of a governmental designee. Such a Council would consider various economic and social problems of the industry, and would strive to solve them for the benefit of labor and management, and for the general welfare.

In this dissertation the Murray Plan has been traced historically for the purpose of determining whether its economic and social philosophy is adaptable to American economic life both now and in the post-war era.

The Murray Industry Council Plan calls for the inception of a democratic corporative order in all American industries, with the consequent re-establishment of social order in our present-day economy. This Plan has been found to be in no way inconsistent with our democratic way of life, and it offers substantial hope of furnishing answers to many of the perplexing problems confronting industry in the United States today. The Plan is not revolutionary in the sense of either communism or socialism, and it stands in between these and economic liberalism

without being involved in the excesses of either extreme. And, while the Plan proposes to control competition, still it is not at variance with our free enterprise system. On the contrary, it gives promise of effectuating actually and in a realistic way many of the very things which competition theoretically was supposed to accomplish. In short, the Plan seems to be a dynamic social apparatus for achieving many long-needed social and economic reforms.

Publication No. 767

Microfilm copy of complete manuscript 178 pages
at 1 1/4 cents, total cost \$2.23, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3370

EDUCATION

THE SUPERVISION OF INSTRUCTION IN THE SECONDARY SCHOOLS OF THE DIOCESE OF BROOKLYN, NEW YORK. A SURVEY OF ITS ORGANIZATION AND TECHNIQUES, 1940-1941

Reverend John Francis Gilson, S.J., Thesis (Ph. D.)
St. Louis University, 1943

The Diocese of Brooklyn has a strong, centrally organized and centrally administered system of secondary education. There are eight diocesan, nine parish, and thirty community high schools. They include academic, commercial, boys', girls', and co-educational institutions. Forty-three participated in this survey.

Responsibility for the organization, administration and supervision of Instruction of the system has been delegated by the bishop to the diocesan superintendent. He is assisted by an associate superintendent. Direct supervision of instruction follows community lines, and is exercised by a board of community supervisors. They are religious, brothers and sisters, who represent their communities, and act as an advisory body to the superintendent.

The superintendent defines the authority and supervisory duties of community supervisors and principals, and indicates procedures for dealing with public agencies and officials. Principals organize local supervisory plans.

The supervisory activities of the superintendent are largely indirect. They include private interviews; group meetings of the board of community supervisors, principals, and teachers; syllabi; bulletins; booklists; occasional visitation of schools; the appointment of committees for curriculum construction, textbooks, examinations, etc.

Of fifty-three selected supervisory activities, most community supervisors read educational

literature; held individual teacher conferences; visited classroom teachers; rated teachers; maintained cumulative teachers' records; attended board meetings, conventions. To read educational literature; visit classroom teachers; suggest remedies for classroom problems; recommend teacher-assignment changes; confer on teacher placement; maintain professional teachers' library they estimated most important for supervision.

Of fifty-one selected supervisory activities, most principals conducted staff meetings; held individual teacher conferences; visited classroom teachers; inspected school plant and equipment; and consulted pupils' parents. To stimulate religious fidelity of students; coordinate religious and vocational guidance; maintain cumulative pupil records; study interests, abilities, etc., of pupils they considered most important for supervision.

Approximately 50 per cent of the community supervisors and principals considered that their present supervisory practices are at least "reasonably adequate" for their needs.

Publication No. 763

Microfilm copy of complete manuscript 621 pages
at 1 1/4 cents, total cost \$7.76, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5310

FEDERAL RELATIONS TO THE FIELD OF HIGHER EDUCATION

Ruth C. Mackaye, Thesis (Ph. D.)
New York University, 1944

The problem investigated in this study is that of federal relations to the field of higher education. The subject is historically significant since it covers an uninterrupted course of relationships during the past three hundred years, or the total period of national history, and it becomes particularly timely for contemporary American society insofar as the present extension of governmental functions into other fields of national concern may indicate a pattern of interaction for federal activity in the area of higher education.

This dissertation has been developed upon the assumption that the various aspects of American life are mutually interdependent and are deeply integrated in the total social milieu. It is based upon the further assumption that, over a long period of national history, there has occurred a shifting in the economic basis of American society together with a parallel change in its social and political philosophies and that the directive for federal activity in relation to higher education is a direct result of this cycle of social change.

With these assumptions in mind the material presented in this study has endeavored to determine a series of trends in American social philosophy accompanied by significant inclinations in economic and political functions which have acted as causative factors for the genesis of federal relations to higher education.

The study has been prefaced by a survey of the Colonial Period in which civil relations to higher education were conspicuously remote in reflection

of the political and social laissez faire of the time. But, coincident with the industrial expansion of the early 19th century and the growth of the liberal theory of social equality, Congress was called upon to provide higher education in the fields of agriculture and industry. Under the Morrill Act of 1862 it created the colleges of agriculture and mechanic arts and subsidized these institutions in every state of the Union by grants from the federal domain.

In the years of political upheaval following the Civil War Congress created the Federal Bureau of Education (now the Office of Education), to some extent as a factor in its policy of reconstruction of education in the rebel states.

The developing concept of social and political liberalism in the closing years of the 19th century saw the initiation of federal restrictions upon the exploitation of human and natural resources and the curbing of individual and corporate monopolies. The government was becoming aware of its responsibility for the total national welfare and social and political theory had been functionally united.

Resulting from the prominent part played by industry in World War I Congress was induced through the efforts of a powerful "special interest" group to create the Federal Board for Vocational Education in which, for the first time, it initiated a policy of substantial federal control.

In the chaotic years following the depression of 1929 social and political philosophy had created the concept of government paternalism toward its citizens. The depression served only to throw into bolder relief the need for new patterns of social control. For the first time Congress entered directly into the area of private higher education giving subsidy to college youth and work-relief to unemployed college graduates and members of college staffs.

As an outcome of the long evolution of governmental functions the federal Congress has

established a framework for its future educational relations. These would include the following:

1. The initiation by the federal government of separate educational projects in the event of failure by private institutions to provide the specific objectives desired, such as projects providing work-experience, projects to develop training programs for leaders of industrial forums and for production supervisors, and greatly extended programs for vocational training;
2. Government interest in reducing competition and duplication between colleges, in surveying the bases upon which these institutions were accredited, and in the regional distribution of existing institutions;
3. Federal insistence upon more adequate guidance at both the junior and senior college levels in order to effect the proper placement of the nation's youth in its economic life;
4. And finally, federal sponsorship of extensive programs of adult education particularly with a view toward the assimilation of minority groups in the interest of national unity.

Publication No. 693

Microfilm copy of complete manuscript 120 pages
at 1 1/4 cents, total cost \$1.50, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5317

PSYCHO-PHYSICAL TECHNIQUE FOR TEACHING RADIOTELEGRAPHIC CODE TO BEGINNERS

Siegfried S. Meyers, Thesis (Ph. D.)
New York University, 1945

The Problem

This study dealt with the relative effectiveness of teaching radiotelegraphic code reception to beginners by two different methods, measured in terms of (1) growth during the learning period, and (2) delayed recall. The two methods were also compared to determine the (1) accuracy of code transcription when a change of emphasis was made in the speed of transmission, (2) the dispersion of the scores from the mean at different stages during the learning period, and (3) the relative improvement in auditory perception, persistence of visual image, and printing speed, as a result of learning code.

The Purpose and Significance of the Study

The purpose of this study was to develop a new method for teaching radiotelegraphic code. The War Department had established a standard method employing auditory association to be used as a pre-induction training course in civilian schools throughout the nation. Using this method as a control, the investigator developed a new method employing visual association. This new method is significant because it reopens the field to candidates who are more eye-minded than ear-minded.

Historical Background

A review of early devices for teaching code showed a definite trend toward the use of automatic devices. Teaching methods progressed from hand-key operated buzzers to mechanical program-drums, perforated tapes, inked tapes, and, finally, phonograph records, with and without voice accompaniment.

Researches relating to code teaching methods were few. Code learning proficiency showed low positive correlation with chronological age, previous education, prior vocation, scholastic achievement; music tests on time, rhythm, loudness, and intensity discrimination showed higher positive correlation with code learning proficiency. Little research of high reliability had been conducted to establish the best teaching method.

Scope of Material

The investigator taught 137 senior boys during the Spring and Fall of 1944 at the Stuyvesant High School in New York City, using 69 as experimental and 67 as control. The experimental group was taught by visual reference to an electrically operated illuminated screen upon which the investigator flashed the characters of the alphabet concurrent with hearing the corresponding code from phonograph records. This was called the "Video" method. The control group was taught by auditory association, consisting of a phonetic word equivalent announced from phonograph records through the learner's head phones immediately following transmission of the corresponding code. This was called the "Audio" method.

Procedure

Five classes were divided into two equated groups based upon the results of preliminary tests on hearing and persistence of visual image. The former test was used to determine perception of time, rhythm and loudness discrimination; the latter to determine the time of persistence of visual image. One group was arbitrarily designated Video; the other was designated Audio.

Both groups were taught simultaneously by means of code records, the Audio records requiring little of the investigator's attention. The Video records, having no phonetic equivalents, were used in conjunction with a keyboard and electrically operated illuminated alphabet screen which were

operated by the investigator who was a competent commercial radiotelegraph operator.

Instruction was given daily for 35 hours, both groups having been tested after each 5-hour learning period. Growth was computed on the basis of relative difficulty of the individual code characters and their relative time duration contained in weekly tests. The frequency of recurrence of difficult as well as easy characters in a given test was taken into consideration. A formula was derived and applied to both groups which properly compensated their raw scores for every test message which they had transcribed.

Delayed recall was measured by testing both groups at two-week intervals, for a total of six weeks, without providing code practice in the interim.

The Evidence and Its Interpretation

Relative growth was compared on the basis of accuracy in code transcription. Without compensating the scores for message difficulty, the control group was apparently superior during the learning period. When compensated scores were computed, the experimental group showed superiority for the greater part of the learning period. At the end of the learning period, the Video group achieved a code speed of 5.67 words per minute; the Audio group achieved a speed of 5.85. After six weeks of delayed recall, the Video group declined to a code speed of 4.45 words per minute; the Audio group declined to a speed of 4.62. The Video method, therefore, proved to be comparable with the Audio method, not only during the learning period, but also during the successive intervals representing the delayed recall period.

This evidences a new method for teaching code to beginners, and is particularly applicable to learners who may not be as ear-minded as they are eye-minded. From a military viewpoint, failures in Army aptitude code tests may be retested by other prognosis tests to ascertain their potential success with the Video method.

Conclusion and Recommendation

The evidence warranted the conclusion that there was no statistically significant difference between the results obtained by the two methods.

The following additional conclusions seemed reasonable from the evidence presented in this thesis:

1. The Video method (a) is acceptable for teaching radiotelegraphic code to beginners, (b) results in satisfactory growth during the learning period, (c) results in satisfactory delayed recall during the post-learning period, (d) results in greater accuracy of code transcription when a change of emphasis is made in the speed of transmission, (e) results in comparable dispersion from the mean score at different learning stages and (f) results in improvement in auditory perception, persistence of visual image, and printing speed.

2. Superiority in the preliminary hearing tests does not necessarily result in code success by the Video method; but superiority in the preliminary persistence of visual image test results in 8.8% greater code success when the Video method is used. Superiority in preliminary hearing tests results in 5.4% greater code success when the Audio method is used for such cases. It is to be noted, further, that superiority in persistence of visual image results in 5.8% greater code success when the Audio method is used for such cases. This indicates that a preliminary persistence of visual image test is a satisfactory test for prognosis for both methods.

3. The true code achievement of a radio operator can only be represented by compensating him for the difficulty of his message, as well as for the variability of the characters in his message.

It is recommended that (1) radio operators be periodically tested to measure their delayed recall, so that constructive measures may be taken to restore operators to a respectable degree of proficiency, (2) the Video method be further

investigated by substituting a large printed chart for the Video screen, the instructor using a pointer to provide visual association of code characters, (3) more elaborate preliminary tests be developed for prognosis purposes; particularly tests for persistence of visual image, (4) standardized tests (compensated for difficulty and variability) for both the International Morse radiotelegraphic code and the American Morse code be developed, (5) a combined method be thoroughly investigated using both the Video and Audio method simultaneously, (6) the Audio method be further studied for those cases who excel in persistence of visual image, and who have average hearing.

Publication No. 720

Microfilm copy of complete manuscript 106 pages
at 1 1/4 cents, total cost \$1.33, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3379

"A CRITICAL ANALYSIS OF THE LEGAL
FINDINGS PERTAINING TO THE TEACHERS'
TENURE OF OFFICE ACT OF NEW JERSEY". (1909-1944)

Richard John O'Brien, Thesis (Ed. D.)
New York University, 1945

The object of this investigation has been to discover the legal rights and privileges, the duties and obligations of teachers in the State of New Jersey under the provisions of the Tenure of Office Act. Its purpose has been to eliminate ambiguity, uncertainty and confusion in order to add to the mental security and potential competence of the profession. Accordingly, this document has specifically analyzed the decisions of the judiciary and the quasi-judicial agencies which are legally authorized to review the actions of the various local boards of education in New Jersey in their application of the Tenure law. This treatise, then, has been concerned solely with the interpretations of the New Jersey Tenure law as applied to teacher litigants. The case law in this study carried reference only to cases already adjudicated either by the courts or the quasi-judicial agencies empowered to settle such disputes.

As regards procedure, a study was made of the decisions of the United States Supreme Court in all cases coming before it which involved the Tenure of Office Act of New Jersey. After exhausting the decisions of the highest appellate tribunal in the United States, an analysis was made of all cases in point as adjudicated by the New Jersey Court of Errors and Appeals and the New Jersey Supreme Court, the highest branches of the state judiciary.

When the study of these judicial findings had been concluded, reference was made to the quasi-judicial determinings of the New Jersey State Board of Education and the Commissioner of Education.

However, this document purposed being not merely a composite of court decisions and quasi-judicial findings, nor simply a compilation of law cases. Rather, in effect, it sought to interpret, analyze and elucidate these determinings in order to indicate cogently and concisely what had been stipulated.

With reference to the conclusions drawn from this analysis, first, it is clear that, by and large, the New Jersey Tenure of Office Act is not a conclusive guarantee of the security of teaching positions, even though it may accord the office a strong degree of stability. It definitely places on the shoulders of the district board of education the burden of proof for the substantiation of all charges against the teacher, and, in the event of a conviction, the teacher is assured of the right of an appeal to both the quasi-judicial tribunals and the courts. Secondly, the protection of Tenure in New Jersey is statewide and is applicable by the statute to all "holders of teachers' certificates". The term 'teacher' has been adjudicated to be a generic term and to include all categories of the instructional personnel. Thirdly, it has been shown that the Tenure Act can be amended or repealed by the Legislature at any time that it deems wise or expedient. Fourthly, it has been demonstrated that local boards of education are not continuing bodies and the rules of one board are not binding upon its successor, unless affirmed by the succeeding board. This has had an important bearing on the matter of teachers' salary schedules which are merely indications of a policy of a district board of education and not necessarily binding in subsequent years, unless specifically reaffirmed. Increments do not become a part of the teacher's salary until they are actually awarded, so that to withhold same does not constitute reduction of salary, within the meaning of the Act.

Fifthly, the dismissal of a teacher must be based on validly supported statutory grounds, charged

in good faith and not as subterfuges, and definitely not by reason of age, sex, residence, marital status, race, religion, or political affiliation.

Thus, in conclusion, the New Jersey Tenure of Office Act compares quite favorably with similar enactments in other states. Its most marked weaknesses are ambiguity of terminology and the fact that it confers on the teacher only a "legislative status", which can be changed at any time, instead of a "contractual status", which may not be impaired by anyone under the provisions of the United States Constitution.

Publication No. 726

Microfilm copy of complete manuscript 232 pages
at 1 1/4 cents, total cost \$2.90, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5312

THE GRAPHIC METHOD OF TEACHING ARCHITECTURAL
DRAFTING IN SENIOR HIGH SCHOOLS, VOCATIONAL AND
ADULT SCHOOLS, AND TEACHER TRAINING INSTITUTIONS

J. Edgar Ray, Thesis (Ed. D.)
New York University, 1944

Purpose of the Problem

The problem was to prepare, organize, and create a syllabus in architectural drafting that would be flexible enough to be used in the senior high school, vocational and adult schools, and in teacher training institutions.

It was necessary to provide problems which would include the basic elements of architectural drafting for the training of students in the types of schools mentioned above, and to provide for continuous progress in the most logical and desirable sequence for teaching the subject.

Basic skills and drafting techniques were provided in a series of nineteen charts. These are to enable the student to move through the various steps of building construction. A series of assignments are given in the form of problems that are synchronized with the work done by the mechanics in the field.

The time allowed for Architectural Drafting I is nine weeks, ten hours per week on the vocational and adult level and the teacher training level. Senior high school students will require more time, possibly a full semester depending largely on the ability of the students. The second part of the syllabus Architectural Drafting II requires a similar amount of time under the same conditions.

The graphic method is a scheme by which all the information necessary for the student draftsman is conveyed through a series of drawings, and explanatory sketches, isometric drawings, perspectives and working drawings which illustrate graphically the

methods of construction and assembly.

Some drawings are "thumbnail sketches" while others are drawn in mechanical isometric at fifteen degrees, or in perspective. Only brief lettered notes are added when absolutely necessary. The explanatory sketches and drawings are made large for easy legibility, and the facility of adding names of parts and sizes identical with the member in the assembly.

All of these drawings are prepared to coincide with the working drawing, thereby making the working drawing easily understood by having a related pictorial drawing. This scheme has been followed through the series of charts. This procedure eliminates all blackboard sketching and drawing, constant explanation and sketching for individual students who may fail to understand the problem. The student receives a clear idea of the construction and assembly from these sketches.

The author has found through years of experience teaching drawing and building construction, that the student grasps the ideas more quickly and more thoroughly with the aid of these explanatory sketches, and he is able to solve a problem and accomplish more in a given time. This principle is carried out through the whole syllabus.

Several experiments to find the most flexible and usable type of syllabus resulted in a decision to use the 18" x 24" size of charts which is also the recommended size for the student drawings. This eliminates all waste of paper and the trimming of drawing plates after they are completed. The charts were drawn in pencil on Post's Tex which facilitates easy changes and alterations when necessary.

The size adopted provided ample area to permit a scale of drawings that the workman is accustomed to use in his work. It also permits more related sketches and pictorials on the same sheet, in a more systematic grouping of information of the problem. Also each student in the class is able to

have a copy for his own individual use in the classroom or for home study. The cost is much less than a textbook.

By this arrangement the student can see the actual drafting techniques in regard to line work, dimensioning, lettering and other phases of drawing used by the architectural draftsman, which will encourage the student to emulate good draftsmanship. Sound educational practice demands the student learn in the form that is going to be used on the job. This scheme develops ability to read working blueprints during the process of learning architectural drafting.

With the graphic method in the form of charts described, the minimum of reading is required to understand the drawing and problems assigned. The student learns the value and the use of the various schemes of illustrating the same thing, a phase often overlooked by writers of most instructional material on the subject.

The charts teach the student graphically "learning to see" which is an ancient device having a very respectable history. The author has been using this method with excellent results for many years in the Stout Institute, Menomonie, Wisconsin, a teacher training school for industrial education. The writer believes other phases of drawing may be taught more efficiently with more lasting results by this method. Other drawing syllabi could be prepared along the same lines which would assist materially in giving the beginner a more substantial and direct application of the principles involved.

Publication No. 695

Microfilm copy of complete manuscript 151 pages
at 1 1/4 cents, total cost \$1.89, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5318

A PLAN FOR THE DEVELOPMENT OF A CURRICULUM
LABORATORY AT ST. LOUIS UNIVERSITY BASED ON
TEACHERS' NEEDS

Sister Mary Clela Zembrodt, O.S.B., Thesis (Ph. D.)
St. Louis University, 1944

The present conception of the curriculum as a "continuous process", one whose content is derived less from the textbook than from current events and materials, has made it necessary that teachers be more directly prepared to take part in the process of curriculum revision. This task involves the study and analysis of pupil needs and of the materials available to fill the needs. In some cases, responsible agencies--state and city boards of education, universities and colleges--have attempted to supply the needed facilities by establishing a combination workroom and library where curriculum materials are made easily accessible.

In no institution has any effort been made to provide this complete service for our Catholic school systems. In the face of the modern need for a truly Catholic program such an agency appears not only an advantage but a necessity. Because teacher growth and development is the chief objective of the Department of Education of the University, this institution would seem best equipped to render such a service. Through the medium of curriculum courses, method courses, and similar channels, the curriculum laboratory may readily become an integral part of the teacher-training program.

A survey of the materials shelved in nine well-developed laboratories revealed that all contain professional books and magazines, textbooks and workbooks, bibliographies, courses of study, and guides to curriculum construction. Less frequently are found maps, charts, display materials, posters,

standardized tests, and collections of similar enrichment materials. In accordance with recommendations of the Committee which surveyed the public schools of St. Louis in 1937 and with the Missouri course of study, as well as with the expressed desire of fifty-six teachers of the parochial schools, a selected classified list of the latter types of materials were added to the materials to be shelved in the laboratory of St. Louis University. Summarily, the materials to be collected are: (1) a selected list of professional books and magazines, (2) an experimentally determined quota of courses of study from states, cities, and dioceses, (3) the more recent and better elementary and secondary textbooks, (4) a selective collection of enrichment materials.

At date of writing, the materials collected were: (1) 460 state and diocesan courses of study, (2) about 600 elementary and secondary textbooks, (3) fifty units of work, (4) 400 items of enrichment materials.

Facilities for housing these materials were provided in a separate room adjoining the faculty room in Sodality Hall. Provision was made by responsible persons for suitable equipment in accordance with the plan submitted. Suggestions regarding the maintenance and development of the laboratory cover the types of equipment needed, their approximate cost, the kind and amount of clerical help required, the selection of a director, his duties, the method of cataloging and filing the materials, and suggestions for keeping them up to date.

Publication No. 768

Microfilm copy of complete manuscript 395 pages
at 1 1/4 cents, total cost \$4.94, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.

Library of Congress Card Number A45-5311

HISTORY

THE FENIAN INVASIONS OF CANADA

Reverend Joseph Stanislaus Brusher, S.J.,
Thesis (Ph. D.)
St. Louis University, 1943

Among the strangest of the many revolutionary manifestations of the nineteenth century were the attempts of the Fenian Brotherhood, an Irish-American revolutionary society, to invade Canada from the United States. A group of Fenians, despairing of any immediate prospect of a successful rebellion in Ireland, decided to strike a blow for Irish freedom by seizing at least a part of Canada. The significance of such a manoeuvre lay not in its military, but rather in its diplomatic aspect. If even moderately successful, it would justify other nations in accordance to the Irish the status and rights of belligerents and would greatly improve their position in negotiations with Great Britain. These rights won, the enterprising revolutionaries planned to fit out privateers to prey upon British commerce and eventually hoped to be largely instrumental in winning freedom for their beloved Ireland. Invasion plans were based on the hope that the Government of the United States, if it did not actively aid the Fenians, would at least allow them to carry out their scheme unhindered.

When, however, in June 1866, John O'Neill crossed the Niagara and routed a superior British force at Ridgeway, his victory was nullified by the vigorous action of General George Meade and the United States authorities, who, by confiscating most of the scanty arms supply of the "Army of Ireland," defeated the invasion before it could be carried out in full force.

In 1870, the same John O'Neill, in the face of dissension and discord in the ranks of the

Brotherhood, made a desperate effort to renew the invasion. But the Fenian mobilization went awry, and the much improved Canadian forces repelled weak Fenian thrusts at Eccles Hill and Huntington. The following year, 1871, O'Neill endeavored to rekindle the dying embers of the Riel rebellion with a filibustering expedition against Manitoba. Again, the United States authorities intervened, and this affair was another failure. This marked the end of Fenian attempts to invade Canada.

These invasion projects aroused a great deal of excitement in the United States, in Canada, in Great Britain, and in Ireland. They deserve a fuller treatment than they have as yet received; hence, this study.

Publication No. 730

Microfilm copy of complete manuscript 232 pages
at 1 1/4 cents, total cost \$2.90, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5305

LITERATURE, ENGLISH

METHODOLOGY IN MILTON SOURCE STUDIES

George A. Gullette, Thesis (Ph. D.)
University of Michigan, 1944

This is a documented analysis of the aims and methods of source studies in Milton, with particular emphasis upon their significance as characteristic illustrations of scholarly procedure in literary research.

Two introductory chapters attempt, first, to show the importance to scholarship, criticism, and pedagogy of an increased concern with methodological matters; and second, to outline the possible approaches a scholar may make to his material, together with an a priori analysis of some of the assumptions and value judgments which each approach entails.

The remainder of the study is devoted to an inductive analysis of approximately 150 representative studies in Milton's sources, extending in time from the mid-eighteenth century to the present. A considerable body of evidence is amassed to support the basic thesis that these studies exhibit a grave confusion of purpose and generally inadequate methods of procedure.

The avowed aims of Milton source studies appear to be reducible to two: (1) to provide information that will permit a reasoned appraisal of Milton's originality; (2) to provide information that will contribute toward a fuller enjoyment and comprehension of Milton's works by the non-scholarly reader. But nowhere in the studies examined is there evidence of an acceptable definition of what is meant by Milton's originality; nor is there evidence of any serious attempt to show the ways in which a knowledge of Milton's sources will contribute to a fuller enjoyment and understanding of his works. The aims appear therefore to be accepted uncritically, and to represent on the whole a conventional justification rather

than a rigorously derived rationale.

The steps by which scholars typically proceed toward a realization of their aims are through the establishment of an antecedent probability that Milton knew the alleged source, the demonstration of similarities between something in Milton and something in his "source", and the drawing of inferences concerning indebtedness once antecedent probability and similarity are thought to be demonstrated. An examination of the actual practice of scholars as they move through these steps in their proof shows that antecedent probability is seldom thoroughly established except in those cases where Milton specifically mentions the work in question. The crucial step thus becomes the demonstration of "parallels" between Milton and his supposed source. But shifting interpretations of both Milton and his sources makes this demonstration, even when it is disinterestedly attempted, unusually difficult of accomplishment. Though sound procedure usually requires that similarity in both thought and expression be shown, scholars are in practice more often than not content with demonstrating one or the other. And lastly, the doubts typically raised by this step in the argument are multiplied by the common failure of scholars to deal adequately with the alternative possibilities (1) that the similarity can be explained upon grounds of coincidence, or (2) that both Milton and his "source" were drawing upon a common tradition or antecedent work.

The lack of disciplined procedure results, as might be expected, in conclusions which are often either (1) unjustified by the evidence, (2) irrelevant, or (3) so commonplace as to be acceptable without the support of the scholarly apparatus. The value of such studies thus characteristically rests in incidental critical dicta which arise from the careful reading of Milton and certain related materials, not in significant conclusions which derive from a systematically developed chain of reasoning

rooted in evidence objectively arrived at. Thus the notion that the methods of literary scholarship are comparable to the disciplined experimental methods employed (or thought to be employed by the natural and physical sciences) is challenged by the findings of this study.

Publication No. 724

Microfilm copy of complete manuscript 283 pages
at 1 1/4 cents, total cost \$3.54, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3378

LITERATURE, SPANISH

A CRITICAL ANALYSIS OF THE
NOVELS OF FERNÁN CABALLERO

Ainslie Burke Minor, Thesis (Ph. D.)
Princeton University, 1943

An inductive analysis of four novels of Fernán Caballero (Cecilia Bohl de Faber y Larrea, 1796 - 1877), -- La Familia de Alvareda, La Gaviota, Lágrimas, and Clemencia. The two main parts deal with the novelist's relationship to Romanticism and with the origin and functional expression of the essentially novelistic elements of her fiction.

La Gaviota, her first published novel, appeared in 1849; but Fernán Caballero had written La Familia de Alvareda, which contains all the characteristic features of her fiction, as early as 1828. Recognized as deriving from Romantic ideologies are her preference for the natural over the artificial; the technique called internalisation, -- the attribution of internal significance to the material world by personification or animation of natural objects and by using them as thematic symbols; and the techniques grouped under the general term externalisation.

Externalisation, -- the process of depicting the inner personality in terms of the external world, -- although commonly associated with Realism, is shown to derive naturally from the concept of Individualism which is the logical source of the "Romantic attitude". In Fernán Caballero's fiction, externalisation finds functional expression in her use of "real life" material; in the autonomous scene and in the attempt to achieve coincidence of real and narration time; in narration, dramatically or via messenger or dialogue; in characterisation, -- identification, classification, anecdotes, the opinions of other characters, physiognomy, actions and physical attitudes; in thought processes, -- physiognomy,

bodily attitudes, and dramatic soliloquies.

The novelist considered the external detail significant because it betrayed the internal, the essential personality of the character. This she conceived as divided into three parts, sentiment, reason, passions. The first is the noblest motivation of action. Reason, although tending to selfishness, is valuable in controlling the passions, which are always base. One of these three elements is dominant in everyone, as is demonstrated by the characters of the novels.

Fernan Caballero's profound Catholicism limited her acceptance of the Romantic attitude, and made her reject its subjective aspects. On the other hand, her treatment of religious themes -- the picturesque and material aspects of religion -- shows the influence of Romanticism.

From the novelistic point of view, the key to Fernán Caballero's technique is her externalisation of the novelistic problem. Rather than centering in the conflict between an individual personality and its environment, her novel portrays the conflict of two cultures, traditionally Catholic Spain and progressive modern Europe, as personified in unilateral characters. The individual at odds with society is scorned as "novelistic", that is to say, romanesque or unreal.

Fernán Caballero's cosmopolitan background gave her a unique opportunity to promote understanding of Spain in Europe. It also made her acutely conscious of the differences of viewpoint on the two sides of the Pyrenees. Conflict and contrast are basic techniques. Main characters must have contrasting foils if they are to successfully externalise their personalities. The simplified type character occasions other characteristic techniques: they are grouped in threes in order to obtain an approximation of the natural complexity of personality; time is instituted as a decisive factor because the immobility of the characters prevents any other solution.

Romantic ideas made their mark on the novelistic structure although the author rejected most of the typically Romantic themes. The author's personality is seen in the woman's view of the world her novels present, in her treatment of children and family life, and in her praise of simple rural society, as an example of natural Old Spanish folk ways.

Publication No. 721

Microfilm copy of complete manuscript 131 pages
at 1 1/4 cents, total cost \$2.26, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3373

MINERALOGY

AN X-RAY AND SPECTROGRAPHIC STUDY
OF LEAD SULPHANTIMONITES

Frank C. Foley, Thesis (Ph. D.)
Princeton University, 1938

Twenty-two specimens purporting to comprise 8 different species of the lead sulphosalts or sulphantimonites were studied by X-ray analysis. Five distinct patterns were found among the minerals examined. A new chemical analysis of boulangerite is given which agrees with the old formula rather than Sjörgens'. The paragenesis of the minerals studied is described. Quantitative spectrographic analysis as used in this study did not prove satisfactory for determining small chemical differences. Determination by X-ray methods is considered to be the only reliable and satisfactory method for distinguishing the different minerals, except chemical analysis supplemented by most careful microscopic study of the sample taken for analysis.

Publication No. 698

Microfilm copy of complete manuscript 60 pages
at 1 1/4 cents, total cost \$.75, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3383

PHILOSOPHY

AN INQUIRY INTO THE FACTUAL BASIS OF HUMAN KNOWLEDGE¹

Virgil Goodman Hinshaw, Jr., Thesis (Ph. D.)
Princeton University, 1945

CONTENTS

| Chapter | Page |
|--|------|
| I Introduction | 1 |
| <u>About Philosophy in General and</u> <u>Knowledge in Particular</u> | 1 |
| II The Basic Propositions of Russell and Schlick | 21 |
| 1. <u>Russell's Basic Propositions and</u> <u>Factual Premisses</u> | 21 |
| 2. <u>Schlick's Konstatierungen</u> | 37 |
| III A Broader Conception of Basic Propositions | 45 |
| 3. <u>A Different Positivist Position</u> | 45 |
| 4. <u>An Analysis of Atomicity</u> | 57 |
| A. Epistemic Atomicity | 59 |
| B. Linguistic Atomicity | 61 |
| C. Scientific Atomicity | 70 |
| D. Ontological Atomicity | 73 |
| E. Conclusions | 76 |
| IV Basic Propositions and Certainty | 81 |
| 5. <u>General</u> | 81 |
| A. Restrictions on 'Certain' and 'Indubitable' | 82 |
| B. 'Certain' Versus 'Known-to-be- Certain' | 86 |
| 6. <u>Certainty and Unique Designation</u> | 97 |

¹Since this dissertation was written, the author has been taken seriously ill and is unable to supply an abstract. Consequently, the Table of Contents is reproduced here, in the hope that it will in some measure serve in place of an abstract.

| Chapter | Page |
|---|------|
| A. The Lewis-Ayer Argument Against Unique Designation . . . | 99 |
| B. Predictors and Classifiers . . . | 106 |
| C. The Refutation of the Lewis- Ayer Argument | 110 |
| D. Russell Replies to Lewis . . . | 118 |
| E. Conclusions | 122 |
| 7. <u>Certainty and Memory</u> | 126 |
| A. Comparison of Percept with Concept | 126 |
| B. Basic Propositions and Inspec- tion | 137 |
| C. Error of Classification | 140 |
| D. Answer to Reichenbach's Case Against Certainty | 143 |
| E. Conclusions | 149 |
| V Basic Propositions and Verification . . . | 162 |
| 8. <u>The Meaning of 'Verification'</u> . . . | 162 |
| A. Reduction | 163 |
| B. Confirmation | 167 |
| C. Basic Verification | 170 |
| 9. <u>Scientific Verification</u> | 172 |
| A. The Rejection of Observation Statements as True | 175 |
| B. The Use of Conventions in Verification | 183 |
| C. The Inductive Faith of the Scientist | 187 |
| D. Theory of Truth in Science: Coherence or Correspondence? . | 188 |
| E. Conclusions | 191 |
| 10. <u>Private and Public Knowledge and Science</u> | 195 |
| A. The Private Basis of Knowledge | 196 |
| B. Privacy and Publicity in Science | 201 |
| C. The Ego-Centric Predicament . . | 205 |

| Chapter | Page |
|---|------|
| 11. <u>The Role of Basic Propositions in Verification</u> | 218 |
| A. Basic Propositions and Personal Verification | 220 |
| B. Basic Propositions as the Basis of Verification | 226 |
| C. Basic Propositions and Error | 253 |
| D. The Rejection of Observation Statements as False | 257 |
| E. Conclusions | 266 |
| (i) Coherence Theory of Truth in Science | 266 |
| (ii) General | 268 |
| 12. <u>The Interconnection of Basic Propositions</u> | 269 |

Publication No. 703

Microfilm copy of complete manuscript 296 pages
at 1 1/4 cents, total cost \$3.70, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3374

PHYSICS

THE SCATTERING OF POTASSIUM IONS NORMALLY INCIDENT ON A METAL SURFACE

Reverend Lawrence Joseph Monville, S. J.,
Thesis (Ph. D.)
St. Louis University, 1943

Beams of positive ions of potassium from a Kunsman catalyst were accelerated in a positive ion gun by from 50 to 1000 volts. Under vacuum conditions of less than 10^{-6} mm. Hg. these ions were directed normally at metal target surfaces of either stainless steel or nickel. The incident beam intensity and the scattered or emitted intensity were measured simultaneously by a D-96475 D.C. amplifier circuit and an H.S. Galvanometer.

Results showed that both positive and negative particles of low energy were scattered from the target surface under bombardment.

With stainless steel there was a positive particle scattering which varied from 7% of the incident intensity at 400 v. to 14% at 100 v. The secondary negative emission from the target varied from practically zero below 50 volt incident intensity to 24% at 900 v. With nickel there was a positive particle scattering of from 4% at 100 v. to 7% at 975 v. and a secondary emission of from 1.75% at 100 v. to 3.2% at 975 v.

The energy of the scattered particles was very low; all positives from stainless steel were stopped by less than 10 volts and all negatives by less than 20. From nickel all positives were stopped by less than 20 and all negatives by less than 40 volts.

There is some evidence, too, of a change in the condition of the target under bombardment, indicating a lessening of negative emission with the passage of time.

Publication No. 764

Microfilm copy of complete manuscript 78 pages
at 1 1/4 cents, total cost \$.98, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5314

PHYSIOLOGY

CELL DIVISION IN RELATION TO EXCESSIVE FATIGUE

Everett Lyne, Thesis (Ph. D.)
New York University, 1945

Problem

The purpose of this investigation was to study the effect of extreme fatigue on young rats. The results were recorded in terms of effect on the weight curves of the individuals and the mitotic activity and general histological pattern of the thyroid and parathyroid glands.

Procedure

Albino rats (age - 25 days) were divided into 4 groups: (1) Experimental Female; (2) Experimental Male; (3) Control Female; and (4) Control Male. All animals were individually earmarked and placed in the same cage to insure the same general conditions.

The experimental groups were subjected, each morning for a period of 20 days, to an enforced swimming period terminating when they were unable to maintain a position with the nostrils above water. The buoyancy of the body was overcome by attaching a weight equal to approximately 10 per cent of the body weight at the base of the tail.

Daily body weights of all animals were taken each morning and, in addition, those of the experimental animals after exercise. The duration of the period of swimming was noted.

On the twenty-first day each animal was given a colchicine injection (0.1 mg. per 100 gms. of body weight) in the right thigh. They were etherized 9½ hours later and the thyroid and parathyroid glands were removed. Bouin's fixative and Galigher's modification of Harris' hematoxylin were used in preparing the tissues and slides.

Results

I. Effects of Fatigue on Growth

The experimental group, as a whole, showed a definite retardation in growth as compared with the control animals. That these variations in the growth pattern were caused by the enforced swimming is supported by the fact that all other environmental conditions were the same for all animals. Male control and experimental groups showed a more rapid rate of growth than did females of corresponding groups.

II. Effects of Fatigue on Endurance

There was little indication of a significant difference in the average duration of the exercise period of the males (124.23 seconds) and that of the females (119.62). Further, there was no marked increase in the duration of the period toward the end of the investigation, although a slightly more consistent duration for both males and females was noted in the last five days.

III. Effect on Mitotic Activity

Ten animals were selected at random in each of the four basic groups. In order to establish the reliability of the results the "t" statistic was used in the analysis of these data.

Thyroid Gland

The counts for these glands were made by counting mitotic figures in every fifth section and multiplying the total by five.

| | <u>Control</u> | <u>Experimental</u> | <u>"t" value</u> |
|----------|----------------|---------------------|------------------|
| Male | 3,667 | 5,692 | 0.183 |
| Female | 2,505 | 2,737.5 | 0.205 |
| Combined | 3,086 | 4,317.75 | 0.668 |

The above figures fail to show any significant differences between the means although in the combined control as compared with the combined experimental groups the "t" value would indicate the possibility of a difference not due to chance but not sufficient to justify any definite conclusions.

Both male and female experimental animals show a higher follicular epithelium and more colloid vacuoles indicating an increased thyroid activity as compared with the controls.

Parathyroid Glands

The counts for these glands were made by counting figures in every other section and multiplying the total by two.

| | <u>Control</u> | <u>Experimental</u> | <u>"t" value</u> |
|----------|----------------|---------------------|------------------|
| Male | 308.2 | 352.2 | 0.204 |
| Female | 280.4 | 217.5 | 0.774 |
| Combined | 294.3 | 284.9 | 0.116 |

With the exception of the counts for the female control and experimental groups the differences between the means may be due to chance, the difference in this one area however not being great enough to justify any definite conclusions.

Conclusions

Male rats between the ages of 25 and 46 days show a greater rate of growth in body weight than do the females. Fatigue, repeated daily by enforced swimming, produces a significant retardation in the rate of growth of both sexes. There are no significant differences, however, between the sexes in the duration of the exercise period.

No significant differences were found between the means of the mitotic counts of the thyroid and parathyroid glands of the various groupings other than in the thyroid counts of the combined controls and the combined experimental animals and the counts of the female control and female experimental parathyroids. In these the "t" value was great enough to indicate a difference not due to chance but not sufficient to justify any definite conclusions.

There was a greater variation in the mitotic counts of the glands of the males than of the females.

The thyroid glands of the animals which were subjected to fatigue show histological evidence of increased activity as compared with the controls.

There is no noticeable change in the histological pattern of the parathyroid glands as a result of repeated fatigue.

Publication No. 727

Microfilm copy of complete manuscript 168 pages
at 1 1/4 cents, total cost \$2.10, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5313

ERYTHROCYTES AND HEMOSTASIS IN HEMOPHILIA-LIKE SWINE

Merle Edward Muhrer, Thesis (Ph. D.)
University of Missouri, 1944

A hemophilia-like condition was observed in a strain of swine, which were all descendants of one male. The coagulation time of whole blood and of plasma from the bleeder swine was abnormally long and presumably the blood was deficient in an available source of thromboplastin. The purpose of this investigation was to determine more exactly the primary defect which causes the slow liberation of thromboplastin and to formulate a satisfactory therapy based upon the correction of this primary defect.

A new technique based on the coagulation time of cloudy, platelet-rich plasma in hypotonic solutions was developed for studying platelet stability. It was found that the coagulation time of platelet-containing plasma was sharply reduced on dilution with hypotonic salt solutions. Bleeder plasma coagulated more slowly than normal plasma in isotonic salt solution. However, bleeder plasma coagulated at the same rate as normal plasma at the lower salt concentration. This was a platelet effect because it was shown that when physiological saline or any one of the more dilute solutions were added the coagulation time of bleeder platelet-free plasma was consistently about four times longer than normal platelet-free plasma. It was assumed as a tentative explanation that bleeder platelets are more resistant to hypotonic salt solutions than are normal platelets. Coagulation time differences in physiological salt concentrations were greatly magnified in hypertonic salt solutions. This was especially evident in platelet-free plasma.

Bleeder erythrocytes were also found to be more stable in hypotonic salt solution than are normal

erythrocytes. The products of erythrocyte destruction, as well as urine and bile, which contain the products of hemoglobin degradation, were effective in lowering the coagulation time of blood in vitro. The intravenous injection of hemolyzed red cells produced a sharp drop in the coagulation time followed by a refractory period in which the coagulation time was extended beyond the preinjection level. Both the in vitro and in vivo results indicate that hemolyzed red cells possess thromboplastic activity.

The experience with hemolyzed-erythrocyte injections was encouraging but the effects were too transient. Hemolytic agents were then added to the circulating blood to cause a slow, continuous breakdown of the erythrocytes and perhaps of the platelets, and thus provide a constant source of available thromboplastin. Acetyl phenylhydrazine, a hemolytic agent, improved hemostasis when injected subcutaneously. Thiodiphenylamine, onions, and n-dipropyl disulfide, all hemolytic agents, were mildly effective hemostatic agents when administered orally. Saponin and sodium oleate produced a temporary sharp reduction in coagulation time when injected intravenously. This initial reduction, however, was followed by a negative phase in which the coagulation time was longer than it was before the injections were given.

The sedimentation rate was positively correlated with the coagulation time. The treatments with hemolyzed red cells or hemolytic agents produced a rather sharp drop in the sedimentation rate which paralleled the sharp drop in coagulation time.

The intravenous injection of hemolyzed red cells or a hemolytic agent such as saponin caused a sharp decrease in fibrinogen, cell volume, and prothrombin along with the immediate decrease in coagulation time. Saponin injections stimulated an increased production of fibrinogen after the immediate initial drop and eliminated the possibility that the refractory coagulation phase was due to afibrinogenemia. The refractory phase of the coagulation time

was accompanied by a further decrease in prothrombin and it was postulated that the prolonged coagulation time was due to hypoprothrombinemia.

Sharp reductions in the coagulation time of the blood failed to produce consistently a corresponding effect upon the saline bleeding time. The saline, into which the bleeding ear was immersed in this test, was replaced with the vasoconstrictors, adrenalin and tannic acid, the hemolytic agents, water, saponin, acetyl phenylhydrazine, and aerosol and also the direct blood coagulants, thromboplastin and thrombin. Neither the vasoconstrictor substances nor the hemolytic agents were effective hemostatic agents when applied superficially. However, when the bleeding ear was immersed in either the thrombin or thromboplastin solutions the blood flow ceased almost immediately.

Publication No. 701

Microfilm copy of complete manuscript 166 pages
at 1 1/4 cents, total cost \$2.13, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3371

POLITICAL SCIENCE

PARLIAMENTARY PARTIES UNDER OLIVER CROMWELL

Margaret Joy Tibbetts, Thesis (Ph. D.)
Bryn Mawr College, 1944

It has been my purpose to study in some detail the political groupings of the Parliaments of Oliver Cromwell's Protectorate. The period was one of political confusion and flux with frequent changes in party alignments, yet in each of Cromwell's Parliaments groups of men with similar principles worked together for the realization of what they considered the nation's fundamental interests. Parliamentary activity was largely overshadowed in the years 1654-1658 by the dominant personality of Cromwell and the vigor of the army leaders; the determination of the majority of Parliamentarians to formulate and secure a government which, as it seemed to them, would realize the principles for which they had fought was, however, of equal if not greater importance in the development of the Protectorate. Between the army officers, eager for reforms, and the conservatives, seeking a legal and "accustomed" government, was Cromwell. The Protector was bound to the army leaders by old ties and common beliefs, but he sought to rest his government upon a foundation which would have Parliamentary approval. The political history of the Protectorate was determined by the struggle between the two groups.

In the Parliament of 1654 there were three main parties--Courtiers, Presbyterians, and Republicans, much the smallest of the three. In the Parliament, after the imposition of the Recognition forced the Republicans to withdraw, Courtiers and Presbyterians debated a new constitution. The Court, dominated by the army, attempted to defend the principles of the Instrument; the Presbyterians desired a constitution which would provide an effective check

upon the army. Disgusted with their quarrels, Cromwell dissolved Parliament in January 1655.

Cromwell's second Parliament, summoned in September 1656, is of greater significance. By 1656 there was a cleavage within the Court. The army officers had been increased in influence by the institution of the system of the Major-Generals, and to many conservative and civilian members of the Court they seemed dangerously powerful. Conservative Courtiers, unlike the army leaders, were less interested in imposing the will of a "godly" minority upon the nation than in consolidating the Protectorate. They feared, and rightly, that if the government did have a legal basis and the support of the majority of the nation, discontented groups would revolt, the Protectorate would fall, and chaos and confusion would result. Similar fears were shared by the lawyers, country gentlemen, and "old" Parliamentarians who composed the Presbyterian party. The result was the cooperation of the conservative Courtiers and Presbyterians in an effort to make Cromwell king. They were opposed by the army officers, the same men who had for so long supported Cromwell and his government. Cromwell refused to accept the crown because of the officers' objections, and the Parliamentary majority was forced to accept his decision. A new Constitution, The Petition and Advice, was adopted, however, and in the brief session of January 1658 Courtiers and Presbyterians defended its principles. They were hampered by the Republicans who skillfully used their opportunity to obstruct proceedings and weaken the new constitution. Alarmed at reports of a Republican plot among the soldiers, Cromwell hastily dissolved Parliament.

The Protectorate under Cromwell had been steadily towards a more conservative form of government than the army liked, and the Petition and Advice failed in Richard's Protectorate because of army opposition, not because of lack of Parliamentary support. Conservative Courtiers and the Presbyterians

had wanted to make Cromwell king in order to ensure stable government, a government in which his position was defined by law and limited by Parliamentary safeguards. This limited monarchy might have been achieved but for the intransigence of the army officers. In the post-Restoration period the Whig Party successfully applied the main principles sought by the majority of Cromwell's second Parliament.

Appended to the discussion of the proceedings of the two Parliaments are lists of the leading members of each party.

Publication No. 725

Microfilm copy of complete manuscript 266 pages
at 1 1/4 cents, total cost \$3.33, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5315

SOCIOLOGY

THE ADJUSTMENT OF THE INJURED UNDER THE MISSOURI WORKMEN'S COMPENSATION ACT

Sara R. Feder, Thesis (Ph. D.)
University of Missouri, 1944

Workmen's compensation is one of the component parts of the social insurance field which has received its recognized place in American community life after the passage of the social security legislation. The movement for the enactment of workmen's compensation in the United States developed rapidly after 1910, and within one decade forty states and three territories enacted such legislation.

In Missouri, however, there was a 17-year struggle before workmen's compensation legislation was finally enacted and was placed on the statute books after favorable acceptance by the citizens in November, 1926. The history of the movement and the role played by the various groups form part of the study since the comparative liberality of the Missouri law is directly related to the struggle.

The purpose of the study was to determine the results of workmen's compensation in Missouri in relation to the social and economic adjustment of the injured and their families during the period of illness and following recovery; to determine which of the problems created for the injured and their families were a result of the provisions of the law and which of its administration; and to recommend changes which would place Missouri in that group of states which through their leadership have made workmen's compensation a symbol of security for men and women injured in the course of their employment.

By the sample method 1038 men and women in the permanent partial disability group, permanent total disability group, and fatal cases whose accidents occurred in all parts of the state were selected for study: a) in relation to their social and

economic status preceding the accident; b) the causes of accident and resulting injuries; c) the compensation, medical services, and adjudication of claims; d) the change in the home during the illness; and e) the types of adjustment made following recovery.

The results of the study are incorporated in 126 statistical tables based on records at the time of injury as well as data obtained from the injured or their families by means of questionnaire and schedule. In addition, there are included graphs and charts, brief case presentations, and the expression of attitudes of the injured and widows to medical service received, legal assistance, lump sum settlements, and economic and social adjustment during the period of recovery or subsequent to the death of the wage earner.

The amount of compensation paid, marital status and dependents, and financial assistance during disability are all parts of the mosaic involved in the adjustment of the injured. Information sought on the attitude of the injured toward their permanent disability brought replies of physical suffering; of objections to confinement to the sick bed; of concern over decreased income; and the fear of future occupational adjustments.

The adjustment of men in the permanent total disability class is perhaps the most complex of all the disability classes. For them the accident resulted in their becoming "unemployables," permanently handicapped, and a burden on their families for the rest of their lives since most of the men were under 50 years of age.

The various problems presented by the widows in order of importance were: 1) the economic problems--sharp decrease of weekly income, as well as the elimination of the income after the workmen's compensation ceased; 2) the educational problems, and 3) home training and discipline of the children.

This study, four decades after the passage of

the first workmen's compensation law in the United States, gives evidence to the fact that a considerable part of the cost of accident is still borne by the injured and their families. When the injured themselves are viewed person by person and problem by problem, the significance of the burden which industry places upon them as a result of the accident becomes apparent.

Publication No. 700

Microfilm copy of complete manuscript 578 pages
at 1 1/4 cents, total cost \$7.23, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A44-3376

ZOOLOGY

RELATION BETWEEN SIZE AND AGE OF THE FOWL CLOACA, BURSA, AND GONADS WITH SPECIAL REFERENCE TO GROWTH AND STRUCTURAL VARIATIONS IN THEIR CONSTITUENT PARTS FROM HATCHING DATE TO SEXUAL MATURITY

Clare Helmer Bennett, Thesis (Ph. D.)
Michigan State College, 1944

Investigation of the avian cloaca has been a subject of intensive interest to relatively few workers during the past two hundred and fifty years.

Review of the literature shows that the anatomy of the cloaca and its size in relation to the size of the bursa and gonads in various age groups of Aves is fragmentary. Additional observations on the cloaca of birds from hatching time to sexual maturity are desirable.

The study is based on the cloacas of one hundred eighty-one pedigreed Single Comb White Leghorn chickens, three Hungarian partridges and two Ring-necked pheasants.

Results of the study showed:

1. The cloaca of the fowl, partridge and pheasant consists of three compartments: the coprodaeum which was the largest, the urodaeum which was the smallest and the proctodaeum which was smaller than the coprodaeum yet larger than the urodaeum.
2. The cloacal compartments and their limits were similar in the three species studied. The position of the cloacal papillae was likewise similar. All species showed the bursa connected to the proctodaeum by a funnel-shaped canal. A broad fold was observed in the proctodaeum of the fowl, partridge and pheasant.
3. A deep coprodael pocket and a uretal vestibule were observed in the partridge while an oblique coprodael fold was seen in the fowl and pheasant. Uretal papillae in the pheasant were found on the anterior edge of longitudinal folds and were

not disc-shaped as in both the fowl and partridge. The bursal aperture was exposed in the partridge while in the fowl and pheasant it was covered by the uro-proctodael fold.

4. Growth in size of the cloaca when measured in percentage increase in length and width was greater in the female than in the male.

5. Maximum size of the cloaca in the male and female fowl was reached from the 131 st to 156 th day of age.

6. Growth in the individual compartment of the cloaca showed that the coprodaeum in the male and female fowl increased rapidly up to the 7 th day and remained fairly constant until the maximum on the 131 st day. Growth in length of the urodaeum was essentially alike in the male and female fowl until the 59 th day and then was greater in female than in male.

7. The increased length of the female cloaca between the ages of 156 and 195 days was due to increased length of the urodaeum.

8. Growth in width of the female urodaeum closely paralleled that of the male through the 131 st day but in the female increase in width was greater from the 131 st day until the 195 th day than it was in the male for the same period.

9. Growth of the proctodaeum was similar in the male and female from hatching data until the 156 th day. Following, which, the female showed a greater increase than the male through the 195 th day.

10. There was no significant growth in the uretal papillae from hatching date through sexual maturity while growth in the genital papillae of the male closely paralleled that of the female through the 32 nd day, after which the male showed a greater increase than the female. The genital papillae in the female showed rapid atrophization after the 131 st day.

11. The bursa reached maximum growth on the

59 th day in the male and 131 st day in the female.

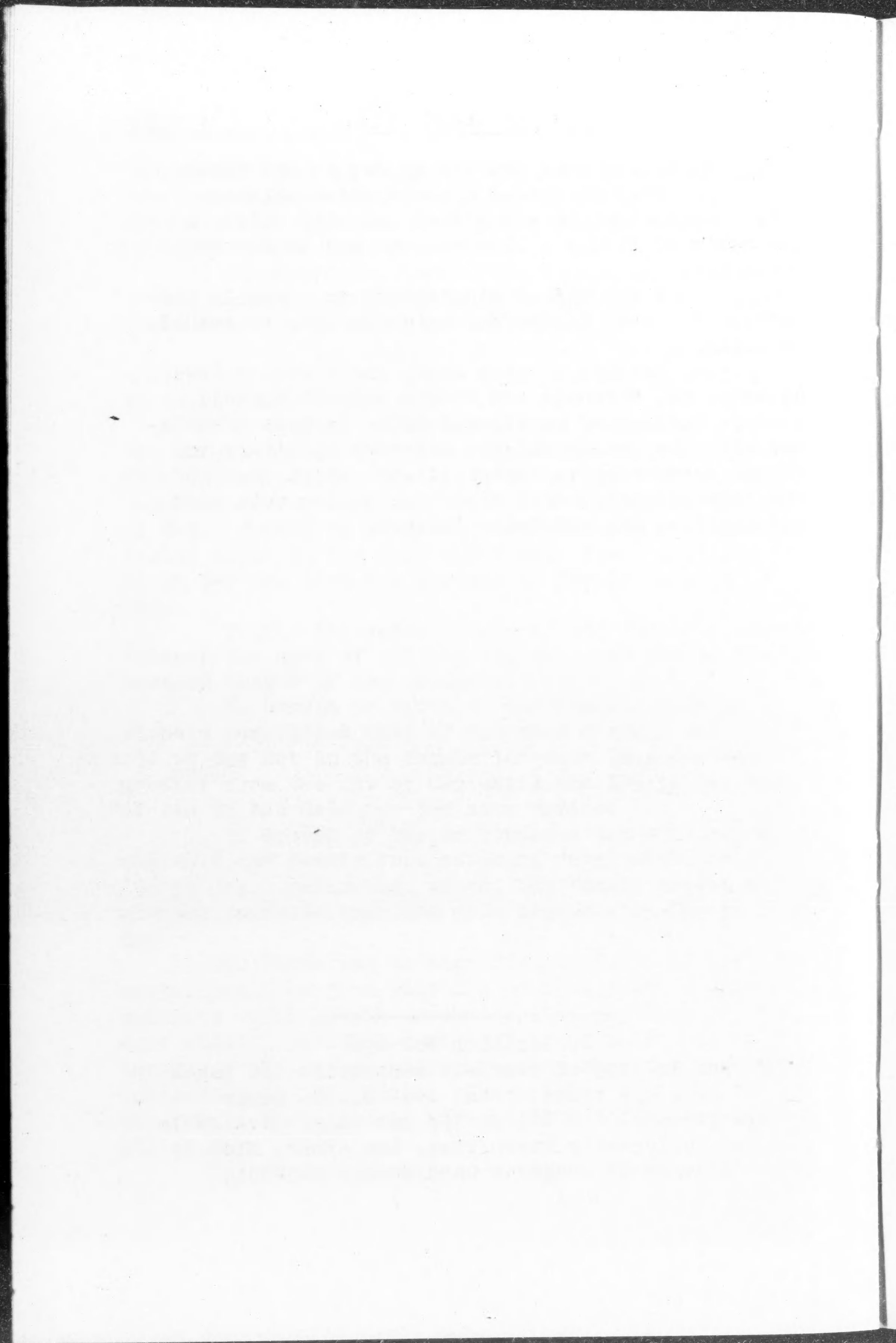
12. Results showed a correlation between bursal atrophization and sexual maturity which on the basis of Riddle's observations may be due to prolactin.

13. There was no significant increase in the number of bursal folds from hatching date to sexual maturity.

14. Results of this study and those of Rowan, Bissonnette, Marshall and Riddle suggest cloacal size is influenced by (1) endocrine factors associated with the gonads and the anterior pituitary and (2) an exteroceptive factor (light) which through the intermediation of the nervous system acts upon and modifies the endocrine factors.

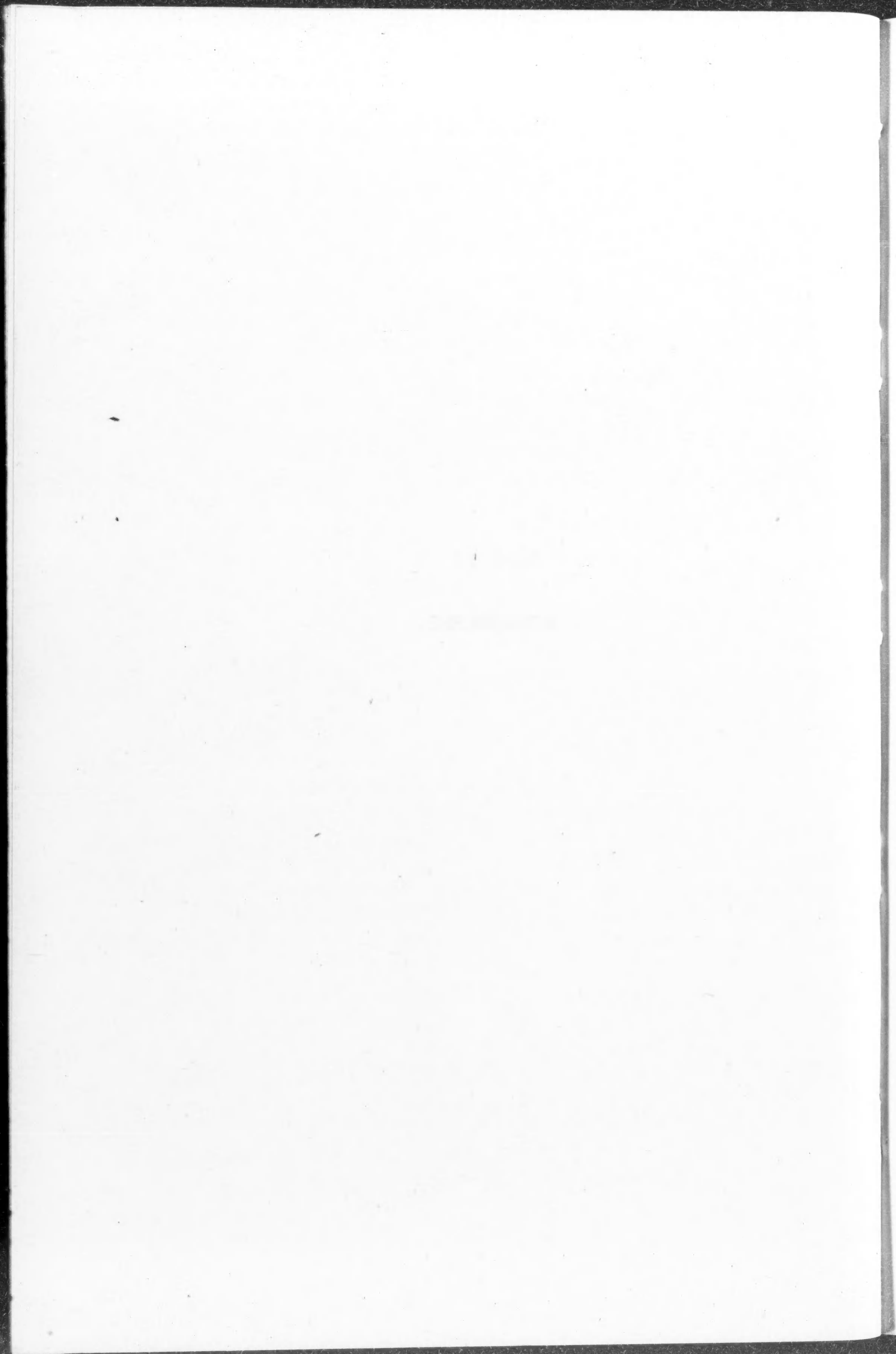
Publication No. 696

Microfilm copy of complete manuscript 80 pages
at 1 1/4 cents, total cost \$1.00, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5319



Part II

MONOGRAPHS



HUMAN ANATOMY--BIBLIOGRAPHY

HETEROTAXY

A Bibliography of Visceral Transposition (S.I.V.C.) in Man

by

Donald deF. Bauer, A.B., M.D., C.M., M.Sc.¹

(From the Department of Pathology of Duke University School of Medicine and Duke Hospital in Durham, North Carolina).

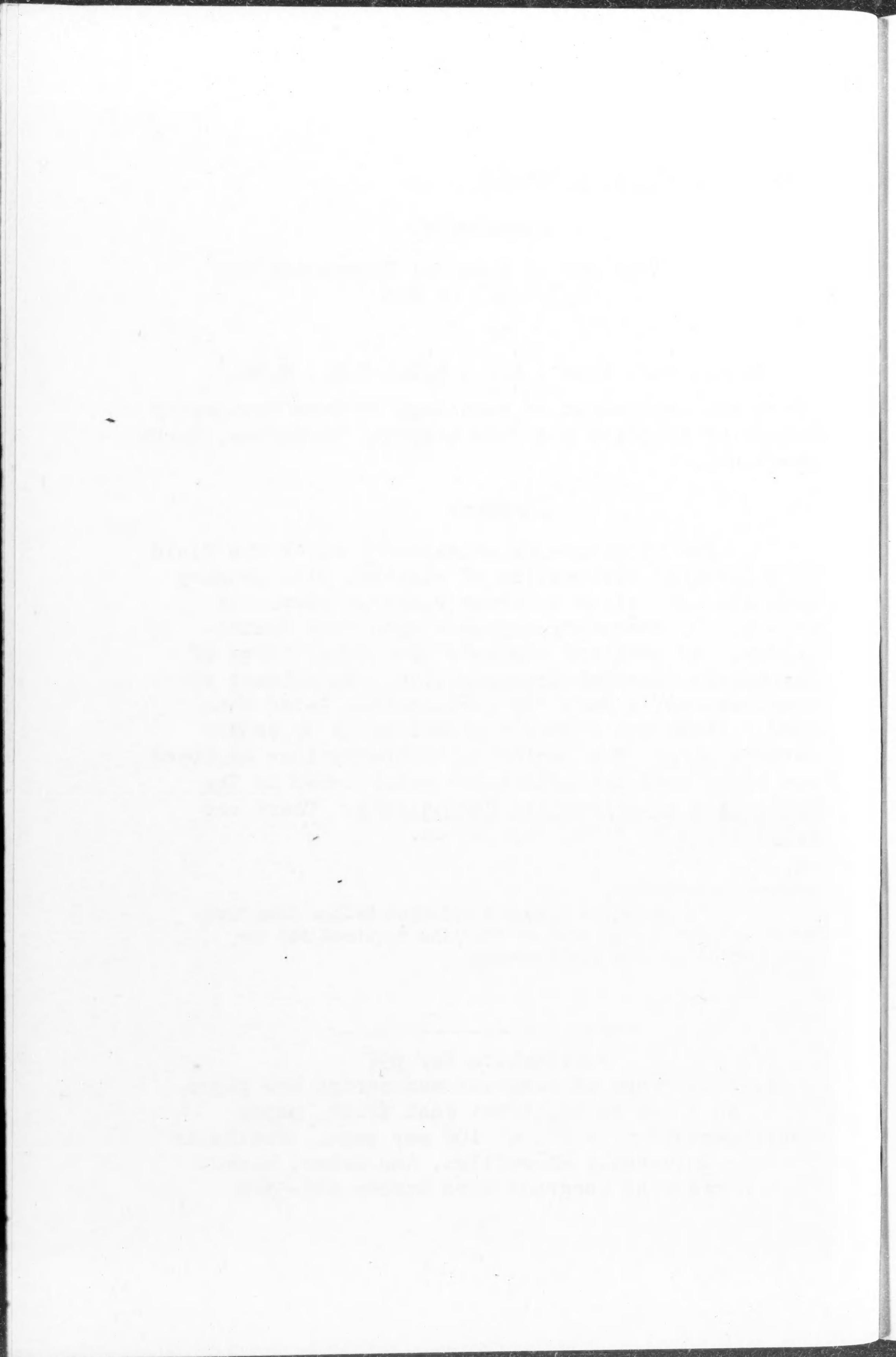
ABSTRACT

The bibliography attempts to cover the field of congenital dislocation of viscera, with primary emphasis upon situs inversus viscerum completus (S.I.V.C.), secondary emphasis upon true dextro-cardia, and tertiary emphasis upon other forms of incomplete visceral transposition. No attempt at completeness is made for publications later than 1942. Items are listed alphabetically by senior authors only. The periodical abbreviations employed are based upon the principles established in The World List of Scientific Periodicals. There are 1,300 items in this compilation.

¹R. Melville Cramer Foundation Fellow from Dartmouth College during most of the time required for the compilation of this bibliography.

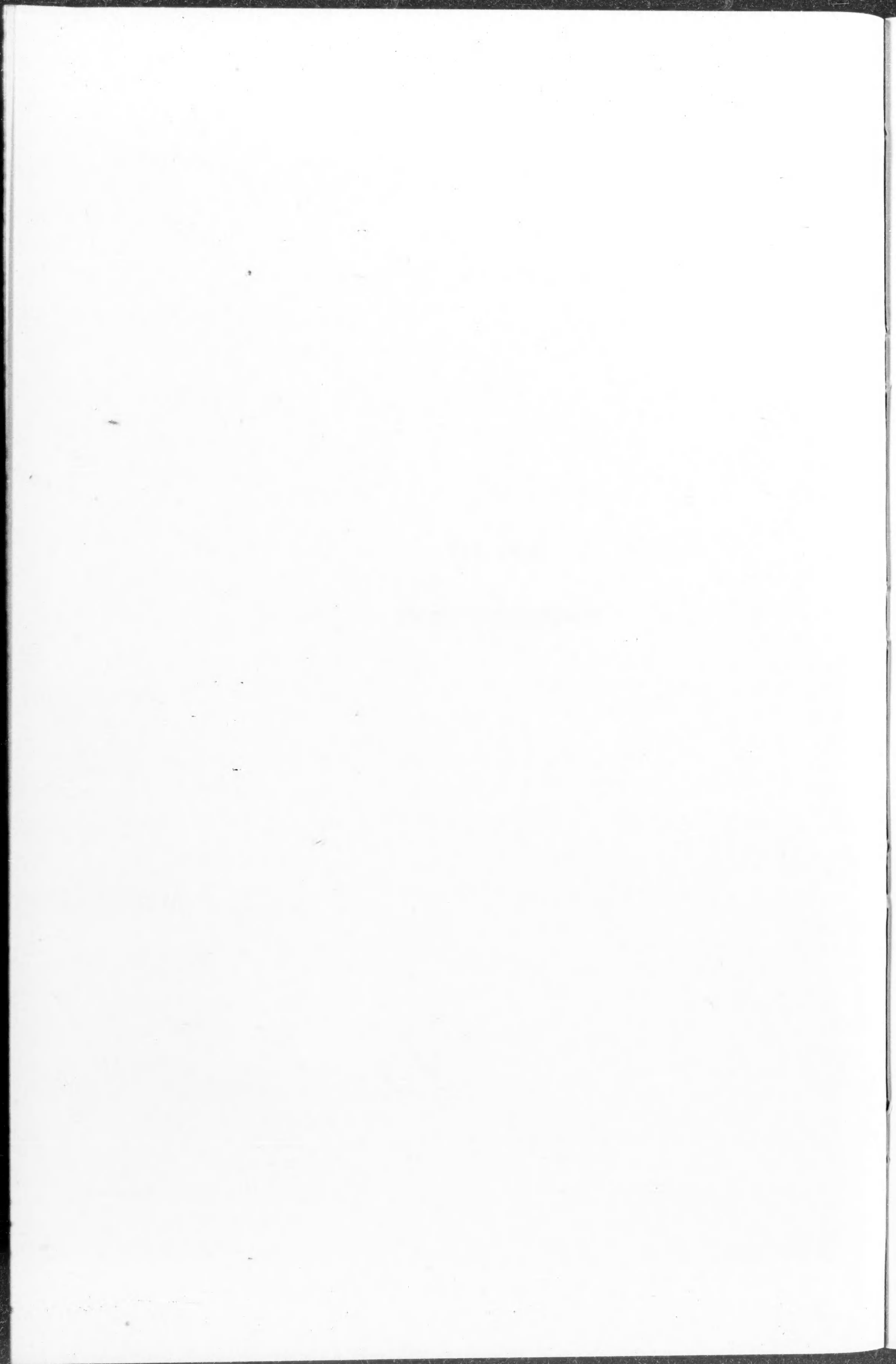
Publication No. 697

Microfilm copy of complete manuscript 160 pages
at 1 1/4 cents, total cost \$2.00, paper
enlargements 6" x 8", at 10¢ per page. Available
from University Microfilms, Ann Arbor, Mich.
Library of Congress Card Number A45-5320



Part III

CUMULATIVE INDEX



CUMULATIVE INDEX OF TITLES

Listed below are the titles of all doctoral dissertations available on microfilm, excepting those abstracted in this booklet, which have been published since the appearance of Vol. III, No. 2 of MICROFILM ABSTRACTS (October, 1941). Abstracts of the following dissertations have been published in special volumes of abstracts prepared for the individual schools. All may be identified by the letters and date following the reference. A new cumulative index will begin with Vol. VII, No. 2.

(M.A....) Microfilm Abstracts, University Microfilms,
Ann Arbor, Michigan.

(P.S....) Abstracts of Doctoral Dissertations, Pennsyl-
vania State College, State College,
Pennsylvania.

(C.S....) Abstracts of Field Studies for Degree of
Doctor of Education, Colorado State College
of Education, Greeley, Colorado.

Positive microfilm copies of the complete manuscript of any of these titles may be had at 1 1/4¢ per page, or paper enlargements, 8½ x 11 inches accommodating two pages each, at 10¢ per page, from University Microfilms, Ann Arbor, Michigan. Order should be made by "Publication Number," and Title.

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

Physical constants of the methyl esters of some of the naturally occurring fatty acids. Paul Marcks Althouse, Ph.D. Thesis, Pennsylvania State College, 1943. pp.80, Pub. No. 631, (P.S. 1943, Vol. VI).

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

Studies of the aging of flue-cured cigarette leaf-tobacco. Seymour Stanton Block, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 97, Pub. No. 521, (P.S. 1942, Vol. V).

The effect of antioxidants and prooxidants upon the autoxidation of corn oil, lard, and methyl oleate. Orville N. Breivik, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 151, Pub. No. 355, (P.S. 1941, Vol. IV).

A study of the influence of certain dietary constituents on the development of dental caries in rats. Thomas L. Canniff, Ph.D. Thesis, Michigan State College, 1943. pp. 118, Pub. No. 575, (M.A. V. 5, No.1).

A study of the composition and properties of fanweed seed oil with the view of finding a substitute for rapeseed oil. John R. Clopton, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 91, Pub. No. 632, (P.S. 1943, Vol. VI).

The application of liquid-liquid extraction to the fractionation of coconut oil. William Ralph Fish, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 103, Pub. No. 734, (P.S. 1944, Vol. VII).

A study of the growth and chemical composition of tobacco seedlings as influenced by their environment. Myers Floyd Gribbins, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 94, Pub. No. 520, (P.S. 1942, Vol. V).

The relation between chemical constitution and insecticidal properties in certain N-Heterocyclic compounds. Herman Lee King, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 97, Pub. No. 519, (P.S. 1942, Vol. V).

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

A study of the ester distillation method for the separation of the monoaminomonocarboxylic acids. Laurence Laird Layton, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 90, Pub. No. 518, (P.S. 1942, Vol. V).

An investigation of certain factors affecting the composition of cigarette smoke. Jason Ernest Matthews, Jr., Ph.D. Thesis, Pennsylvania State College, 1941. pp. 79, Pub. No. 375, (P.S. 1941, Vol. IV).

A study of several analytical methods used in determining the fat acid composition of tea seed oil. Karl Frederick Mattil, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 95, Pub. No. 374, (P.S. 1941, Vol. IV).

A study of the use of solvent extraction as a method for the separation of the component glycerides of coconut oil. Mortimer Harold Menaker, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 99, Pub. No. 339, (P.S. 1941, Vol. IV).

Investigations on the Pantothenic acid requirement for reproduction in the white Leghorn fowl. Walther Henry Ott, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 60, Pub. No. 517, (P.S. 1942, Vol. V).

An investigation of the component glyceride structure of olive oil. James Russell Oyler, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 184, Pub. No. 516, (P.S. 1942, Vol. V).

Studies on the metabolism of thiamine in swine. James William Pence, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 117, Pub. No. 117, (P.S. 1944, Vol. VII).

Anemia, weight maintenance, and dermatitis in avitaminotic pigeons. Eugene Loren Powell, Ph.D. Thesis, University of Missouri, 1942. pp. 122, Pub. No. 583, (M.A. 1942, Vol. V, No. 1).

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

An improved standard laboratory procedure for the quantitative saponification and esterification of fats. Sedgwick Cookerly Rogers, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 101, Pub. No. 732, (P.S. 1944, Vol. VII).

A comparative chemical study of the keratins. Torsti P. Salo, Ph.D. Thesis, University of Michigan, 1942. pp. 110, Pub. No. 570, (M.A. 1942, Vol. V, No. 1).

A comparative study of the metabolism of amino derivatives of propionic acid. Frances Armistead Schofield, Ph.D. Thesis, University of Michigan, 1943. pp. 109, Pub. No. 574, (M.A. 1943, Vol. V, No. 1).

A study of the effects of time, buffer composition, specific ions, and ionic strength on the surface tension of solutions of B-lactoglobulin. Gertrude Haspelslagh Spremulli, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 135, Pub. No. 510, (P.S. 1942, Vol. V).

The yield and quality of Pennsylvania cigar-leaf tobacco as influenced by fertilizer treatment and system of rotation. Joseph Clyde Underwood, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 65, Pub. No. 515, (P.S. 1942, Vol. V).

A comparative study of the effects of glucose, sucrose, fructose and invert sugar on growth, fat and glycogen formation in the white rat. Bruno Vassel, Ph.D. Thesis, University of Michigan, 1939. pp. 140, Pub. No. 572, (M.A. 1939, Vol. V, No. 1).

Utilization and excretion of ingested ascorbic acid by the dairy cow. Mitchell George Vavich, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 131, Pub. No. 633, (P.S. 1943, Vol. VI).

Comparative sulfonamide studies in the normal avian. Adrian James M. Veigle, T.O.R., Ph.D. Thesis, Pennsylvania State College, 1944. pp. 132, Pub. No. 733, (P.S. 1944, Vol. VII).

AGRICULTURAL AND BIOLOGICAL CHEMISTRY

Some comparisons of the biological value of glycerol and propylene glycol. Gaylord Purcell Whitlock, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 124, Pub. No. 542, (P.S. 1942, Vol. V).

Studies on the administration of sulfaguanidine to normal and scouring calves. Isadore Zipkin, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 150, Pub. No. 534, (P.S. 1942, Vol. V).

AGRICULTURAL CHEMISTRY

A study of some chemical and physical properties of the clay minerals, attapulgite, saponite and nontronite. Orval Graham Caldwell, Ph.D. Thesis, University of Missouri, 1942. pp. 186, Pub. No. 436, (M.A. 1943, Vol. IV, No. 2).

The effect of certain cultural practices on the ascorbic acid content of some horticultural plants. Frank Baker Cross, Ph.D. Thesis, University of Missouri, 1939. pp. 128, Pub. No. 444, (M.A. 1943, Vol. IV, No. 2).

A study of the sterols, sterolins, and certain alcohols of some legume seed oils. L. Carroll King, Ph.D. Thesis, Michigan State College, 1942. pp. 78, Pub. No. 429, (M.A. 1943, Vol. IV, No. 2).

Some chemical studies of the navy bean (*Phaseolus Vulgaris*). Arnold C. Ott, Ph.D. Thesis, Michigan State College, 1943. pp. 83, Pub. No. 591, (M.A. 1944, Vol. V, No. 2).

Experiments with x-ray treatments on the seeds of certain crop plants. Wendell Russel Tascher, Ph.D. Thesis, University of Missouri, 1929. pp. 42, Pub. No. 469, (M.A. 1943, Vol. IV, No. 2).

AGRICULTURAL CHEMISTRY

A mineralogical and chemical investigation of some clay fractions of putnam silt loam. Eugene Perry Whiteside, Ph.D. Thesis, University of Missouri, 1944. pp. 113, Pub. No. 665, (M.A. 1945, Vol. VI, No. 1).

AGRICULTURAL EDUCATION

The development of vocational education in Agriculture for young and adult farmers in Pennsylvania for the ten-year period, 1931 to 1941. Russell Burton Dickerson, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 190, Pub. No. 634, (P.S. 1943, Vol. VI).

AGRICULTURE

Land utilization in China and in the United States. Keh Chi-yang, Ph.D. Thesis, Michigan State College of Agriculture, 1944. pp. 121, Pub. No. 683, (M.A. 1945, Vol. VI, No. 1).

A history of the evolution of agriculture in Nebraska, 1870-1930. Verne S. Sweedlun, Ph.D. Thesis, University of Nebraska, 1940. pp. 509, Pub. No. 421, (M.A. 1942, Vol. IV, No. 1).

AGRONOMY

The inheritance of resistance to races of oat smut. Alfred Manwiller, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 41, Pub. No. 735, (P.S. 1944, Vol. VII).

ART AND ARCHAEOLOGY

A technological study of the unglazed pottery and figurines from Seleucia on the Tigris. Frederick Rognald Matson, Jr., Ph.D. Thesis, University of Michigan, 1939. pp. 200, Pub. No. 660, (M.A. 1945, Vol. VI, No. 1).

BACTERIOLOGY

A study of the serological relationship of *phytomonas tumefaciens* and *alcaligenes radiobacter*. Madeline Fiorillo Coleman, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 86, Pub. No. 736, (P.S. 1944, Vol. VII).

Bacteriological observations on the ripening of cheddar cheese. Darrell Dwight Deane, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 109, Pub. No. 533, (P.S. 1942, Vol. V).

Optimal carbon dioxide tensions for primary isolation of the gonococcus: response of the organism to other gaseous environments. W. W. Ferguson, Ph.D. Thesis, Michigan State College, 1942. pp. 64, Pub. No. 488, (M.A. 1943, Vol. IV, No. 2).

A study of yeast growth-promoting substances in white sugar. Harlow H. Hall, Ph.D. Thesis, Michigan State College, 1943. pp. 82, Pub. No. 671, (M.A. 1945, Vol. VI, No. 1).

A study of the fermentation of legume silages. Herbert Dean McAuliffe, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 139, Pub. No. 507, (P.S. 1942, Vol. V).

A serological study of some lophotrichic members of the green fluorescent bacteria. Joseph Naghski, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 70, Pub. No. 369, (P.S. 1941, Vol. IV).

Biological activities of bacteria isolated from water supplies. Oliver Herdien Peterson, Ph.D. Thesis, University of Missouri, 1942. pp. 233, Pub. No. 437, (M.A. 1943, Vol. IV, No. 2).

Thermophilic fermentation of cellulose. Theodore S. Polansky, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 139, Pub. No. 365, (P.S. 1941, Vol. IV).

BACTERIOLOGY

Studies of the catalase activity of hemophilus pertussis and antigenically related organisms. Lucile Mitchell Portwood, Ph.D. Thesis, Michigan State College, 1944. pp. 60, Pub. No. 692, (M.A. 1945, Vol. VI, No. 1).

Glucose and hydrocarbon oxidation by Pseudomonas Aeruginosa. Roslyn L. Schuman, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 71, Pub. No. 635, (P. S. 1943, Vol. VI).

The dissimilation of pure hydrocarbons by members of the genus Pseudomonas. Raymond John Strawinski, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 90, Pub. No. 636, (P.S. 1943, Vol. VI).

The influence of acids on the respiration of Saccharomyces cerevisiae. Clarence Kirby Wadsworth, Ph.D. Thesis, Michigan State College, 1944. pp. 67, Pub. No. 666, (M.A. 1945, Vol. VI, No. 1).

BIOGRAPHY, CLASSICAL

Nicias: his family and the tradition of his great wealth. Lynn Kirtland, Ph.D. Thesis, Princeton University, 1938. pp. 99, Pub. No. 416, (M.A. 1942, Vol. IV, No. 1).

BIOLOGICAL CHEMISTRY

The role of pH in determining the toxicity of ammonium compounds. Walter Albert Chipman, Jr., Ph.D. Thesis, University of Missouri, 1934. pp. 155, Pub. No. 617, (M.A. 1944, Vol. V, No. 2).

A study of the relationship between the pH values of the contents of the intestinal tract and the deposition of calcium in the bones of rats. Sylvia Cover, Ph.D. Thesis, University of Missouri, 1933. pp. 100, Pub. No. 604, (M.A. 1944, Vol. V, No. 2).

BIOLOGICAL CHEMISTRY

The intermediary metabolism of histidine and some related imidazole derivatives. William Jefferson Darby, Jr., Ph.D. Thesis, University of Michigan, 1942. pp. 184, Pub. No. 430, (M.A. 1943, Vol. IV, No. 2).

The effect of ultraviolet and infrared radiation to the thin films and infrared absorption of certain oils. Nelson Ging, Ph.D. Thesis, Michigan State College, 1942. pp. 60, Pub. No. 454, (M.A. 1943, Vol. IV, No. 2).

The metabolism of thiophene and some of its derivatives. Max Eli Chilcote, Ph.D. Thesis, University of Michigan, 1944. pp. 127, Pub. No. 672, (M.A. 1945, Vol. VI, No. 1).

Factors influencing phospholipid metabolism. Marjorie Janice Groothuis, Ph.D. Thesis, University of Michigan, 1943. pp. 129, Pub. No. 594, (M.A. 1944, Vol. V, No. 2).

Nutritional requirements of rabbits, guinea pigs and hamsters. John William Hamilton, Ph.D. Thesis, University of Missouri, 1943. pp. 129, Pub. No. 596, (M.A. 1944, Vol. V, No. 2).

Vitamin deficiencies in rations of natural feedstuffs. Hubert Heitman, Jr., Ph.D. Thesis, University of Missouri, 1943. pp. 81, Pub. No. 595, (M.A. 1944, Vol. V, No. 2).

Some aspects of the Kahn reaction with animal sera and nonsyphilitic human sera. Stanley Marcus, Ph.D. Thesis, University of Michigan, 1942. pp. 265, Pub. No. 470, (M.A. 1943, Vol. IV, No. 2).

The preparation and quantitative determination of the estrogens. Alan Mather, Ph.D. Thesis, Saint Louis University, 1939. pp. 162, Pub. No. 478, (M.A. 1943, Vol. IV, No. 2).

BIOLOGICAL CHEMISTRY

Additional observations on the chick antianemia factor. Boyd Lee O'Dell, Ph.D. Thesis, University of Missouri, 1943. pp. 102, Pub. No. 600, (M.A. 1944, Vol. V, No. 2).

Changes in the nitrogenous constituents of the urine following the administration of amino acids. Andrew A. Ormsby, Ph.D. Thesis, University of Michigan, 1942. pp. 125, Pub. No. 428, (M.A. 1943, Vol. IV, No. 2).

Factors influencing the deposition of "fat" in the liver. Eugene Roberts, Ph.D. Thesis, University of Michigan, 1943. pp. 170, Pub. No. 590, (M.A. 1944, Vol. V, No. 2).

- I. The ultraviolet absorption of vitamin K₁ and the effect of light.
 - II. The quantitative chromatographic determination of vitamin D in fish liver oils.
- Frank Sargent Tomkins, Ph.D. Thesis, Michigan State College, 1942. pp. 41, Pub. No. 455, (M.A. 1943, Vol. IV, No. 2).

A study of certain factors in attempts to alter resistance of animals to virus infections of the respiratory tract. Albert Harold Wheeler, D.P.H. Thesis, University of Michigan, 1943. pp. 143, Pub. No. 661, (M.A. 1945, Vol. VI, No. 1).

A study of some of the factors influencing the liver glycogen content of young white rats. Yen-Hoong Loo, Ph.D. Thesis, University of Michigan, 1943. pp. 107, Pub. No. 593, (M.A. 1944, Vol. V, No. 2).

The metabolism of monobromobenzene, benzene, benzyl chloride, and related compounds in the rabbit. Robert F. Witter, Ph.D. Thesis, University of Michigan, 1944. pp. 186, Pub. No. 679, (M.A. 1945, Vol. VI, No. 1).

BOTANY

Studies on the etiology of sweet cherry canker in Pennsylvania. Shuk Yee Chan, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 122, Pub. No. 532, (P.S. 1942, Vol. V).

An anatomical study of eighty Sumatran woods. Robert A. Cockrell, Ph.D. Thesis, University of Michigan, 1934--Revised 1941. pp. 317, Pub. No. 384, (M.A. 1942, Vol. IV, No. 1).

Taxonomy of the genus *pythium pringsheim*. John T. Middleton, Ph.D. Thesis, University of Missouri, 1940. pp. 213, Pub. No. 331, (M.A. 1942, Vol. IV, No. 1).

Laboratory and field studies on the retention and control of certain protective copper fungicides. Harold James Miller, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 127, Pub. No. 531, (P.S. 1942, Vol. V).

The effect of various accessory growth substances on excised stem tips of *HELIANTHUS ANNUUS* L. in culture. Beatrice Scheer Smith, Ph.D. Thesis, University of Michigan, 1940. pp. 113, Pub. No. 493, (M.A. 1940, Vol. V, No. 1).

A comparison of X-ray induced mutations and mutations occurring spontaneously in ring chromosomes in maize. Edward Allan Weaver, Ph.D. Thesis, The University of Missouri, 1942. pp. 93, Pub. No. 589, (M.A. 1944, Vol. V, No. 2).

CERAMICS

The system, magnesium oxide--boric oxide. Mellen Aubrey Knight, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 77, Pub. No. 557, (P.S. 1942, Vol. V).

CERAMICS

Mineral and colloidal constitution of some Georgia kaolins. Lane Mitchell, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 165, Pub. No. 370, (P.S. 1941, Vol. IV).

Studies on the hydration of clays. August Carl Siefert, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 146, Pub. No. 508, (P.S. 1942, Vol. V).

Solid solution phenomena in the various forms of calcium orthosilicate. Samuel Zerfoss, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 173, Pub. No. 559, (P.S. 1942, Vol. V).

CHEMICAL ENGINEERING

Liquid-vapor equilibrium in hydrocarbon-water systems. Richard E. Chaddock, Ph.D. Thesis, University of Michigan, 1940. pp. 120, Pub. No. 423, (M.A. 1942, Vol. IV, No. 1).

The preparation, properties, and oiliness of several dispersions of metallic soaps in lubricating oil and a comparison of these dispersions with oleic acid dispersed in oil. John Michael Hannegan, Ph.D. Thesis, University of Missouri, 1935. pp. 81, Pub. No. 605, (M.A. 1944, Vol. V, No. 2).

CHEMISTRY

Synthetic antimalarials. Robert Raymond Adams. Ph.D. Thesis, Pennsylvania State College, 1944. pp. 225, Pub. No. 737, (P.S. 1944, Vol. VII).

Studies on the detergent properties of amylolytic enzymes and of sodium oleate and sodium lauryl sulfate. Lilian Linda Arent, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 133, Pub. No. 558, (P.S. 1942, Vol. V).

CHEMISTRY

I. The cleavage and rearrangement of alpha-bromo-anilides.

II. The preparation and properties of ether solutions of diethyl ketimine.

Jacob Osborn Ashcraft, Jr., Ph.D. Thesis, Pennsylvania State College, 1941. pp. 76, Pub. No. 358, (P.S. 1941, Vol. IV).

I. The preparation of ketimines.

II. Reactions of N-monochloroamines.

Ralph Allen Bankert, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 74, Pub. No. 738, (P.S. 1944, Vol. VII).

A. Application of the glass electrode to dairy products.

B. Theory of tanning.

Charles R. Barnes, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 73, Pub. No. 356, (P.S. 1941, Vol. IV).

The electrical conductance of alkaline earth halides in ethanol-water systems. Richard Louis Bateman, Ph.D. Thesis, Michigan State College, 1944. pp. 73, Pub. No. 668, (M.A. 1945, Vol. VI, No. 1).

I. The Permanganate titration of thallous salts.

II. The determination of bismuth by caffeine.

Tetraiodobismuthate (III).

Robert S. Beale, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 44, Pub. No. 537, (P.S. 1942, Vol. V).

I. Studies of Neohexyl halides.

II. Studies of chloropivalic acid and derivatives.

III. Miscellaneous.

Thomas P. Carney, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 187, Pub. No. 351, (P.S. 1941, Vol. IV).

Synthetic antimalarials. Earl Cone Chopin, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 117, Pub. No. 746, (P.S. 1944, Vol. VII).

CHEMISTRY

Studies of:

- I. The reducing action of t-Butyl Grignard reagent.
- II. The dehydration of 2,2-Dimethyl-4-Ethyl-3-Hexanol.
- III. Friedel-Crafts reaction on neopentyl alcohol and benzene.

Thomas Wayne Clapper, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 124, Pub. No. 556, (P.S. 1942, Vol. V).

The effects of phenyl, cyclohexyl, and cyclopentyl groups on the physical properties of some heavy hydrocarbons. Duane G. Clarke, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 181, Pub. No. 705, (P.S. 1944, Vol. VII).

The polymerization of tetramethylethylene hydrogenation studies. Newell C. Cook, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 166, Pub. No. 637, (P.S. 1943, Vol. VI).

The structures of the tetraisobutylenes and miscellaneous studies. John Norman Cosby, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 123, Pub. No. 352, (P.S. 1941, Vol. IV).

Studies on the toxicity of gold compounds in mice and rats. Charles W. Denko, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 164, Pub. No. 638, (P.S. 1943, Vol. VI).

Basic chromic nitrates. Dorothy Gail Engle, Ph.D. Thesis, University of Michigan, 1940. pp. 97, Pub. No. 599, (M.A. 1944, Vol. V, No. 2).

- I. The synthesis of 2,3,3,4-Tetramethylpentane.
- II. The synthesis of 3,3-Dimethyl-1-Chlorobutane.
- III. Miscellaneous.

Charles Richard Enyeart, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 103, Pub. No. 536, (P.S. 1942, Vol. V).

CHEMISTRY

A study of the magneto-optic rotations of some hydrocarbons, lubricating oils, and non-hydrocarbons. Edward G. Foehr, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 256, Pub. No. 743, (P.S. 1944, Vol. VII).

The scattering of hydrogen ions in hydrogen and water. Celeste Michael Fontana, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 51, Pub. No. 555, (P.S. 1942, Vol. V).

The scattering of hydrogen ions in water vapor. Howard Thomas Francis, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 67, Pub. No. 553, (P.S. 1942, Vol. V).

The action of alkali on cyclohexenecarbonals 1, 1-Dicarboxylates and spiro-barbiturates. Dudley M. Gallagher, Ph.D. Thesis, University of Missouri, 1942. pp. 67, Pub. No. 463, (M.A. 1943, Vol. IV, No. 2).

- I. A study of the action of Grignard reagents with carbonyl compounds and a proposed mechanism for the reaction.
 - II. Dehydration of tertiary alcohols.
 - III. Synthesis of new aliphatic hydrocarbons.
 - IV. Miscellaneous.
- Richard Stanley George, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 194, Pub. No. 639, (P.S. 1943, Vol. VI).

- I. Studies of the isopropyl group.
 - II. Synthesis of 2,2-dimethyl-3-ethyl-1-pentanol.
 - III. Studies of optically active compounds.
 - IV. Miscellaneous studies.
- Clyde Edgar Gleim, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 131, Pub. No. 346, (P.S. 1941, Vol. IV).

- I. Antimalarials and antimalarial intermediates.
- II. Reactions of some Grignard reagents with mesityl oxide.

CHEMISTRY

Dale Preston Joel Goldsmith, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 127, Pub. No. 554, (P.S. 1942, Vol. V).

Diffuse scattering of X-rays by single crystals. Robert Quinly Gregg, Ph.D. Thesis, University of Missouri, 1943. pp. 105, Pub. No. 597, (M.A. 1944, Vol. V, No. 2).

The determination of palladium with beta furfuraldoxime. John R. Hayes, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 47, Pub. No. 341, (P.S. 1941, Vol. IV).

Solvent extraction of low molecular weight hydrocarbons. Glenn Herbolzheimer, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 224, Pub. No. 552, (P.S. 1942, Vol. V).

I. Further fluorination reactions in organic chemistry.
II. The dichlorides of neohexane.
Daniel Francis Herman, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 161, Pub. No. 640, (P.S. 1943, Vol. VI).

The low pressure catalytic hydrogenolysis of esters. John William Hodge, Ph.D. Thesis, University of Missouri, 1942. pp. 75, Pub. No. 449, (M.A. 1943, Vol. IV, No. 2).

A study of the wax of the nelumbo pentrapetala. Sister Agnes Marie Horner, Ph.D. Thesis, Saint Louis University, 1939. pp. 106, Pub. No. 477, (M.A. 1943, Vol. IV, No. 2).

I. Preliminary studies on some ethyl and t-Butyl homologs of naphthalene.
II. Studies on some highly branched heptyl and octyl chlorides.

William Holden James, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 164, Pub. No. 641, (P.S. 1943, Vol. VI).

CHEMISTRY

The oxidation of tetraisobutylene and studies on the resulting products. Miscellaneous studies. Herbert Halston Johnson, Jr., Ph.D. Thesis, Pennsylvania State College, 1941. pp. 87, Pub. No. 342, (P.S. 1941, Vol. IV).

Chlorination of petroleum fractions. Robert Winston Keefer, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 110, Pub. No. 546, (P.S. 1942, Vol. V).

- I. The heat capacity and entropy, heats of fusion and vaporization and the vapor pressure of isobutane.
- II. The heat capacity and entropy, heats of fusion and vaporization and the vapor pressure of silicon tetramethyl.
- III. The heat capacity and entropy, heats of fusion and vaporization, and the vapor pressure of dimethyl ether. The density of gaseous dimethyl ether.
- IV. Hindered rotation and molecular structure. Robert M. Kennedy, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 86, Pub. No. 353, (P.S. 1941, Vol. IV).

A physico-chemical method for the determination of the vitamin D potency of fish oils. Gerald Vaughan Kingsley, Ph.D. Thesis, Michigan State College, 1942. pp. 28, Pub. No. 452, (M.A. 1943, Vol. IV, No. 2).

The action of 1:8 naphthalyl dichloride in the friedelcrafts reaction and the structure proof of the derivatives of 8-benzol-1-naphthoic acid. John Edwin Kircher, Ph.D. Thesis, University of Missouri, 1943. pp. 87, Pub. No. 606, (M.A. 1944, Vol. V, No. 2).

Optical studies on some crystalline organic compounds.

- I. Nitrogen substituted 4-nitrophthalimides.
- II. 2,4-dinitrophenylhydrazones of aldehydes and ketones.

CHEMISTRY

Alan Fred Kirkpatrick, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 78, Pub. No. 642, (P.S. 1943, Vol. VI).

The preparation and reactions of ketones containing the dineopentylcarbonyl group. Charles Turner Lester, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 102, Pub. No. 348, (P.S. 1941, Vol. IV).

Studies in reactions and enolization of sterically hindered carbonyl compounds. Charles E. Lewis, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 58, Pub. No. 344, (P.S. 1941, Vol. IV).

A study of mercury-oil emulsions. Amos L. Lingard, Ph.D. Thesis, University of Kansas, 1940. pp. 49, Pub. No. 486, (M.A. 1943, Vol. IV, No. 2).

The rate of absorption of carbon dioxide in diethanolamine solutions. James O. Maloney, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 142, Pub. No. 376, (P.S. 1941, Vol. IV).

The pyrolysis of propane. Stuart McLain, Ph.D. Thesis, University of Michigan, 1932. pp. 120, Pub. No. 458, (M.A. 1943, Vol. IV, No. 2).

The Beckmann rearrangement of cyclohexanone oximes. Arthur Douglas McLaren, Ph.D. Thesis, University of Missouri, 1943. pp. 95, Pub. No. 587, (M.A. 1944, Vol. V, No. 2).

The condensation of the methyl dipropyl carbinols with phenol in the presence of aluminum chloride. Carl Ridge Meloy, Ph.D. Thesis, Michigan State College, 1942. pp. 45, Pub. No. 426, (M.A. 1943, Vol. IV, No. 2).

Additions to the double bond promoted by hydrogen fluoride. Alfred Charles Meunier, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 107, Pub. No. 340, (P.S. 1941, Vol. IV).

CHEMISTRY

- I. Hydrogenation studies.
II. The action of primary Grignard reagents on trimethylacetyl chloride.

Ronald Edgar Meyer, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 184, Pub. No. 338, (P.S. 1941, Vol. IV).

Synthetic alipatic hydrocarbons of nine to twelve carbons. George William Moersch, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 135, Pub. No. 551, (P.S. 1942, Vol. V).

Synthetic antimalarials. Harry S. Mosher, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 141, Pub. No. 550, (P.S. 1942, Vol. V).

Studies on the physical and chemical properties of aqueous soap and alkali solutions and their relationship to practical detergency tests. James Frederick Oesterling, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 101, Pub. No. 368, (P.S. 1941, Vol. IV).

The mechanism of the alkylation reaction. Wilbur Hirsch Pearlson, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 70, Pub. No. 643, (P.S. 1943, Vol. VI).

The design and construction of a photoelectric spectrophotometer for use in the ultraviolet and the absorption curves of hydrocarbons (3 volumes--3 parts). Rudolph John Pfister, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 475, Pub. No. 548, (P.S. 1942, Vol. V).

The benzilic rearrangement of aliphatic alpha diketones. Albert Pohland, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 94, Pub. No. 747, (P.S. 1944, Vol. VII).

The preparation and properties of vanadium tetrachloride. Maurice Green Powell, Ph.D. Thesis, Pennsylvania

CHEMISTRY

State College, 1944. pp. 60, Pub. No. 742, (P.S. 1944, Vol. VII).

Hexamethyldisilane and the trimethylsilyl derivatives. Blaine Otis Pray, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 76, Pub. No. 739, (P.S. 1944, Vol. VII).

I. The action of anhydrous hydrogen fluoride on acetophenone.

II. Trifluoroacetophenone and its properties.

Edward O. Ramler, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 77, Pub. No. 547, (P.S. 1942, Vol. V).

Sterically hindered aliphatic ketones. David Irwin Randall, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 83, Pub. No. 364, (P.S. 1941, Vol. IV).

The molecular state of acetic acid vapor. Howard Lester Ritter, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 71, Pub. No. 644, (P.S. 1943, Vol. VI).

The synthesis and properties of eighteen C₂₅ to C₂₈ hydrocarbons. Charles Sherman Rowland, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 82, Pub. No. 740, (P.S. 1944, Vol. VII).

Electron and proton scattering experiments. Allen Stevenson Russell, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 84, Pub. No. 373, (P.S. 1941, Vol. IV).

The preparation of alkamine esters of orthoalkoxy benzoates. Lawrence John Schroeder, Ph.D. Thesis, St. Louis University, 1942. pp. 129, Pub. No. 612, (M.A. 1944, Vol. V, No. 2).

Studies on Sarsasapogenin and related compounds. Anthony Charles Shabica, Jr., Ph.D. Thesis, Pennsylvania State College, 1942. pp. 475, Pub. No. 549, (P.S. 1942, Vol. V).

CHEMISTRY

A kinetic investigation of hydrogen fluoride catalysis in the alkylation of toluene by tertiary butyl chloride. Jerome William Sprauer, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 131, Pub. No. 372, (P.S. 1941, Vol. IV).

I. Determination of bismuth as quinine iodobismuthate (III).

II. Determination of bismuth as narcotine iodobismuthate (III).

Oscar F. Stambaugh, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 49, Pub. No. 645, (P.S. 1943, Vol. VI).

Reactions of B-enyne hydrocarbons. Chapin E. Stevens, Ph.D. Thesis, University of Missouri, 1942. pp. 104, Pub. No. 462, (M.A. 1943, Vol. IV, No. 2).

A study of the electrophoretic mobility of carbon, cotton, and wool in aqueous and non-aqueous detergent solutions. Warren Stubblebine, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 119, Pub. No. 545, (P.S. 1942, Vol. V).

A study of trialkylsilicon compounds and substituted tetraalkylsilanes. Walker Albert Strong, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 89, Pub. No. 748, (P.S. 1944, Vol. VII).

The preparation of alkyl and alkamine esters of P-amino cinnamic acid. Louis Leon Sulya, Ph.D. Thesis, Saint Louis University, 1939. pp. 114, Pub. No. 479, (M.A. 1943, Vol. IV, No. 2).

The heat capacity of nickel nitrate hexammoniate from 54°K to 300°K, the transition at 2430 K, and the anomalous energy absorption below 85°K. Fred Charles Toettcher, Ph.D. Thesis, University of Missouri, 1940. pp. 59, Pub. No. 385, (M.A. 1942, Vol. IV, No. 1).

CHEMISTRY

The steroidal sapogenins. Daniel Lamb Turner, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 249, Pub. No. 351, (P.S. 1941, Vol. IV).

A study of the fragmentation of some tertiary carbinols condensed with benzene in the presence of aluminum chloride. Henry Lewis Van Dyke, Ph.D. Thesis, Michigan State College of Agriculture and Applied Science, 1944, pp. 78, Pub. No. 691, (M.A. 1945, Vol. VI, No. 1).

New sources for known sapogenins and six new sapogenins; the structures of hecogenin, manogenin and yuccagenin, three new steroidal sapogenins; miscellaneous studies. Paul Reuben Ulshafer, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 98, Pub. No. 749, (P.S. 1944, Vol. VII).

I. Studies on the synthesis of ketones.

II. Studies on the podbielniak-taylor-simons column.

III. Steroids. Halopregnanolone compounds.

Romeo Barrick Wagner, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 310, Pub. No. 379, (P.S. 1941, Vol. IV).

I. The dehydration of alcohols.

II. The synthesis of nonanes.

Ruth B. Warner, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 106, Pub. No. 750, (P.S. 1944, Vol. VII).

The preparation of some quaternary ammonium compounds. Earl Adam Weilmuenster, Ph.D. Thesis, St. Louis University, 1942. pp. 83, Pub. No. 614, (M.A. 1944, Vol. V, No. 2).

Some reactions of neophyl chloride. Cyrus A. Weisgerber, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 112, Pub. No. 741, (P.S. 1944, Vol. VII).

I. The fluorination of bromoform.

II. Organic reactions of carbon monoxide catalyzed by hydrogen fluoride.

CHEMISTRY

Allen Carl Werner, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 48, Pub. No. 366, (P.S. 1941, Vol. IV).

- I. The action of t-butylmagnesium chloride on acetyl chloride.
- II. The nonenes from the copolymerization of the olefins from t-butyl alcohol and t-amyl alcohol.
- III. Studies on methylpinacolylcarbinol.
- IV. Miscellaneous studies.

William Raleigh Wheeler, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 233, Pub. No. 380, (P.S. 1941, Vol. IV).

The colloidal state and precipitation of certain metallic hydroxides in concentrated solutions of nickel sulfate. Harold Jerome Wiesner, Ph.D. Thesis, Michigan State College, 1943. pp. 84, Pub. No. 576, (M.A. 1943, Vol. V, No. 1).

- I. The zinc reduction of pentaerythrityl.
- II. The preparation of certain compounds of the cyclobutane series.

Paul H. Williams, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 83, Pub. No. 360, (P.S. 1941, Vol. IV).

Studies on steroids. Emerson L. Wittbecker, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 140, Pub. No. 541, (P.S. 1942, Vol. V).

A study of the polymers formed in the reactions of certain triarylchloromethanes with phenyl lithium. J. John Wynstra, Ph.D. Thesis, University of Michigan, 1943. pp. 60, Pub. No. 573, (M.A. 1943, Vol. V, No. 1).

Synthetic quinoline antimalarials. William H. Yanko, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 116, Pub. No. 744, (P.S. 1944, Vol. VII).

Studies relating to a physical chemical method of vitamins D assay. Robert Bruce Young, Ph.D. Thesis,

CHEMISTRY

Michigan State College, 1944. pp. 58, Pub. No. 667, (M.A. 1945, Vol. VI, No. 1).

The free energy of formation of methylammonium chloride from third law and thermal data. Charles Walter Ziemer, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 120, Pub. No. 745, (P.S. 1944, Vol. VII).

I. The polymerization of 3-Ethyl-2-Pentene.

II. The action of sodium alkyls on aliphatic chlorides. Harry D. Zook, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 116, Pub. No. 565, (P.S. 1942, Vol.V).

CHEMISTRY, PHYSICAL

The operation and application of the tiselius electrophoresis apparatus. Chester R. Hardt, Ph.D. Thesis, Michigan State College of Agriculture and Applied Science, 1943. pp. 223, Pub. No. 586, (M.A. 1944, Vol.V, No. 2).

CHRONOLOGY

The indiction cycle in Egypt. Sidney P. Goodrich, Ph.D. Thesis, Princeton University, 1937. pp. 76, Pub. No. 417, (M.A. 1942, Vol. IV, No. 1).

COMMUNICATIONS

Phases of international law affecting the flow of international news communications. William Finley Swindler, Ph.D. Thesis, University of Missouri, 1942. pp. 223, Pub. No. 435, (M.A. 1943, Vol. IV, No. 2).

DAIRY HUSBANDRY

A study of shrinkage in ice cream. Denzel J. Hankinson, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 126, Pub. No. 564, (P.S. 1942, Vol. V).

DAIRY HUSBANDRY

The effect of heat treatment and antioxidants upon the keeping quality of pure butterfat. Donald Victor Josephson, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 92, Pub. No. 646, (P.S. 1943, Vol. VI).

The relationship of bacteria to the development of oxidized flavor in milk. Samuel Asher Lear, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 182, Pub. No. 563, (P.S. 1942, Vol. V).

Preservation of fluid milk by concentrating and freezing. Joseph G. Leeder, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 127, Pub. No. 751, (P.S. 1944, Vol. VII).

The determination of total solids in liquid dairy products by means of forced heated air. Charles W. Livak, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 193, Pub. No. 647, (P.S. 1943, Vol. VI).

Grass and legume silages, their methods of preservation and nutritive values with special reference to carotene. Fenoï R. Murdock, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 125, Pub. No. 648, (P.S. 1943, Vol. VI).

DRAMA

Shakespeare on the French Stage in the Eighteenth Century. Marion Monaco, Ph.D. Thesis, Bryn Mawr College, 1943. pp. 253, Pub. No. 581, (M.A. 1943, Vol. V, No. 1).

ECONOMICS

Administrative control of state expenditures. John Tyler Caldwell, Ph.D. Thesis, Princeton University, 1939. pp. 206, Pub. No. 441, (M.A. 1943, Vol. IV, No. 2).

Collective bargaining under the New Deal 1933-1941. Alphonse H. Clemens, Ph.D. Thesis, St. Louis University, 1941. pp. 281, Pub. No. 615, (M.A. 1944, Vol. V, No. 2).

ECONOMICS

Governmental price policies in the Third Reich. Hans Janssen, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 396, Pub. No. 569, (P.S. 1942, Vol. V).

The office of count of the privy purse in the late Roman empire. George R. Monks, Ph.D. Thesis, University of Michigan, 1938. pp. 416, Pub. No. 424, (M.A. 1943, Vol. IV, No. 2).

Farm mortgage financing in Missouri 1915-1940. Emil Samuel Troelston, Ph.D. Thesis, University of Missouri, 1943, pp. 220, Pub. No. 664, (M.A. 1945, Vol. V, No. 1).

Fluctuations in urban rents, their causes and implications. Roy Wenzlick, Ph.D. Thesis, St. Louis University, 1942. pp. 306, Pub. No. 616, (M.A. 1944, Vol. V, No. 2).

EDUCATION

The reading interest of 347 Negro high-school pupils Dunbar High School, Okmulgee, Oklahoma. W. E. Anderson, Ed.D. Thesis, Colorado State College, 1943. pp. 112, Pub. No. 621, (C.S. 1943, Vol. V.).

The relation of ability in reading and achievement in high school subjects. Field study No. 1. William E. Anderson, Ph.D. Thesis, Colorado State College of Education, 1942. pp. 87, Pub. No. 497, (C.S. 1942, Vol. IV).

The development of a meaning vocabulary in the intermediate grades. Martha L. Addy, Ed.D. Thesis, Colorado State College, 1940. pp. 151, Pub. No. 411, (C.S. 1941, Vol. III).

The economic problems of American life since 1930 as seen by frontier thinkers. Elmer Rudolph Arndt, Ed.D. Thesis, Colorado State College, 1941. pp. 252, Pub. No. 412, (C.S. 1941, Vol. III).

EDUCATION

Determination of major social problems and generalizations since 1930 as revealed in the analysis of book literature. Field study No. 2. Elmer Rudolph Arndt, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 154, Pub. No. 498, (C.S. 1942, Vol. IV).

A study to determine whether textbooks in Economics, Sociology and Social problems furnish the information necessary for an understanding of present-day economic and social problems. Elmer R. Arndt, Ed.D. Thesis, Colorado State College, 1943. pp. 231, Pub. No. 620, (C.S. 1943, Vol. V).

The determination of norms. Walter Gerald Bergman, Ph.D. Thesis, University of Michigan, 1929. pp. 335, Pub. No. 335, (M.A. 1942, Vol. IV, No. 1).

Junior college provisions for adult education. Burke W. Bradley, Ph.D. Thesis, University of Missouri, 1942. pp. 215, Pub. No. 465, (M.A. 1943, Vol. IV, No. 2).

A study of local administrative units and attendance areas for the schools of Nebraska. Louis A. Bragg, Ed.D. Thesis, Colorado State College, 1943. pp. 284, Pub. No. 619, (C.S. 1943, Vol. V).

The status of the objectives and content of business law in the secondary schools. Elmer R. Browning, Ed.D. Thesis, Colorado State College, 1940. pp. 169, Pub. No. 407, (C.S. 1941, Vol. III).

The work of legal aid clinics in the United States--its implications to the business education curriculum. Field study No. 3. Elmer Ross Browning, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 131, Pub. No. 499, (C.S. 1942, Vol. IV).

A continuation of curriculum studies in the social sciences and citizenship; Part I, the present status of the social studies. Oscar A. DeLong, Ed.D. Thesis,

EDUCATION

Colorado State College, 1941. pp. 222, Pub. No. 404, (C.S. 1941, Vol. III).

An analysis of the extent to which practices recommended in books on high school teaching methods are based on psychological principles. Claude Maurice Dillinger, Ph.D. Thesis, University of Missouri, 1942. pp. 134, Pub. No. 432, (M.A. 1943, Vol. IV, No. 2).

The effect of controlling vocabulary upon the understanding of sentences in reading. Enoch Dumas, Ed.D. Thesis, Colorado State College, 1941. pp. 49, Pub. No. 398, (C.S. 1941, Vol. III).

Syllabic errors in certain misspelled words. Field study No. 2. Enoch Dumas, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 73, Pub. No. 500, (C.S. 1942, Vol. IV).

An analysis of high school graduates and non-graduates. Field study No. 1. J. Fred Essig, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 140, Pub. No. 501, (C.S. 1942, Vol. IV).

Present practices in homogeneous grouping in one hundred ninety-eight elementary schools in Texas. A. N. Foster, Ed.D. Thesis, Colorado State College, 1941. pp. 128, Pub. No. 399, (C.S. 1941, Vol. III).

The test-study method versus the study-test method of teaching spelling. A. N. Foster, Ed.D. Thesis, Colorado State College, 1943. pp. 105, Pub. No. 630, (C.S. 1943, Vol. V).

Communication sound slide scripts. E. Dana Gibson, Ed.D. Thesis, New York University, 1944. pp. 219, Pub. No. 676, (M.A. 1945, Vol. VI, No. 1).

Description and prediction of physical development in school boys. Marguerite F. Hall, Ph.D. Thesis, University of Michigan, 1934. pp. 289, Pub. No. 460, (M.A. 1943, Vol. IV, No. 2).

EDUCATION

Federal control of secondary education in the ABC Republics. Robert King Hall, Ph.D. Thesis, University of Michigan, 1942. pp. 480, Pub. No. 387, (M.A. 1942, Vol. IV, No. 1).

Problems of public school support in South Dakota. John W. Headley, Ed.D. Thesis, Colorado State College, 1941. pp. 228, Pub. No. 403, (C.S. 1941, Vol. III).

County trust fund investments of the permanent school fund of South Dakota. John William Headley, Ed.D. Thesis, Colorado State College, 1939. pp. 111, Pub. No. 415, (C.S. 1941, Vol. III).

A pattern for adult education. Community survey and program. Louis Herbert, Ph.D. Thesis, New York University, 1943. pp. 196, Pub. No. 608, (M.A. 1944, Vol. V, No. 2).

The history of the University of Toledo. Frank R. Hickerson, Ph.D. Thesis, University of Cincinnati, 1941. pp. 596, Pub. No. 425, (M.A. 1943, Vol. IV, No. 2).

A survey of physical education attitudes in sixty-three secondary schools of Illinois. Eugene L. Hill, Ed.D. Thesis, Colorado State College, 1941. pp. 255, Pub. No. 402, (C.S. 1941, Vol. III).

The health, government, education, and religion of a community. Oliver S. Ikenberry, Ed.D. Thesis, Colorado State College, 1941. pp. 238, Pub. No. 395, (C.S. 1941, Vol. III).

Leisure activities of a community. Oliver S. Ikenberry, Ed.D. Thesis, Colorado State College, 1941. pp. 190, Pub. No. 405, (C.S. 1941, Vol. III).

Economic factors affecting education in an agricultural community. Oliver S. Ikenberry, Ed.D. Thesis, Colorado State College, 1939. pp. 202, Pub. No. 406, (C.S. 1941, Vol. III).

EDUCATION

Public funds for private and parochial schools: a legal study. Leslie W. Kindred, Jr., Ph.D. Thesis, University of Michigan, 1938. pp. 306, Pub. No. 337, (M.A. 1942, Vol. IV, No. 1).

A case-study evaluation of the Oxford method of individualized education. Edward R. Knight, Ph.D. Thesis, New York University, 1943. pp. 449, Pub. No. 609, (M.A. 1944, Vol. V, No. 2).

The speaking situations which secondary school pupils meet with the greatest frequency. J. Howard Kramer, Ed.D. Thesis, Colorado State College, 1941. pp. 72, Pub. No. 396, (C.S. 1941, Vol. III).

A determination and evaluation of the materials and activities used in teaching speech. J. Howard Kramer, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 72, Pub. No. 502, (C.S. 1942, Vol. IV).

The speech activities for which the high school should provide instruction based on the opinions of students, teachers, recent graduates and adults. J. Howard Kramer, Ed.D. Thesis, Colorado State College, 1943. pp. 59, Pub. No. 629, (C.S. 1943, Vol. V).

A comparison and evaluation of the capacities and achievements of permanent and transient students of the Gladewater, Texas, High School. Field study No.1. Mannette Leake, Ed.D. Thesis, Colorado State College of Education, 1941. pp. 57, Pub. No. 503, (C.S. 1942, Vol. IV).

The history of instruction in American literature in colleges and universities of the United States 1827-1939. John Smith Lewis, Jr., Ph.D. Thesis, New York University, 1941. pp. 402, Pub. No. 431, (M.A. 1943, Vol. IV, No. 2).

Studies in the evaluation of educational attitudes. I. N. McCollom, Ed.D. Thesis, Colorado State College,

EDUCATION

1941. pp. 191, Pub. No. 390, (C.S. 1941, Vol. III).

Educational opportunities in Missouri public and non-public high schools. Charles Willard McLane, Ph.D. Thesis, University of Missouri, 1942. pp. 244, Pub. No. 433, (M.A. 1943, Vol. IV, No. 2).

Problems of articulation between the junior college and the university. Frederick James Marston, Ph.D. Thesis, University of Missouri, 1942. pp. 238, Pub. No. 585, (M.A. 1944, Vol. V, No. 2).

A determination of the principles of the biological sciences of importance for general education. William Edgar Martin, Ph.D. Thesis, University of Michigan, 1944. pp. 394, Pub. No. 689, (M.A. 1945, Vol. VI, No. 1).

A report of an analysis of the reading situation in the second and third grades in the Tulsa, Oklahoma public schools. Charles C. Mason, Ed.D. Thesis, Colorado State College, 1940. pp. 460, Pub. No. 392, (C. S. 1941, Vol. III).

A report of an analysis of certain basal readers and teachers' manuals in grades four, five, and six. Charles C. Mason, Ed.D. Thesis, Colorado State College, 1940. pp. 92, Pub. No. 393, (C.S. 1941, Vol. III).

An analysis of certain middle-grade readers and accompanying manuals. Charles C. Mason, Ed.D. Thesis, Colorado State College, 1941. pp. 110, Pub. No. 394, (C.S. 1941, Vol. III).

A proposed school budget law for Illinois. Eugene Harvey Mellon, Ed.D. Thesis, Colorado State College, 1941. pp. 167, Pub. No. 408, (C.S. 1941, Vol. III).

Public hearings on high school budgets in the state of Illinois. Martin Thomas Monson, Ed.D. Thesis, Colorado State College, 1943. pp. 149, Pub. No. 628, (C. S. 1943, Vol. V).

EDUCATION

The physical aspects of offices in the secondary schools of Illinois. Melvin Severin Monson, Ed.D. Thesis, Colorado State College, 1941. pp. 114, Pub. No. 627, (C.S. 1943, Vol. V).

The present status of teacher rating in the United States. A. L. Morgan, Ed.D. Thesis, Colorado State College, 1940. pp. 186, Pub. No. 401, (C.S. 1941, Vol. III).

Improving the motion picture experiences of youth. Field study No. 2. A. L. Morgan, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 103, Pub. No. 504, (C.S. 1942, Vol. IV).

Practices and conditions relating to home study of junior high school pupils. A. L. Morgan, Ed.D. Thesis, Colorado State College, 1943. pp. 113, Pub. No. 626, (C.S. 1943, Vol. V).

The effect of employment on the scholastic success of freshmen at Nebraska State Teachers College, Kearney, Nebraska. W. L. Nicholas, Ed.D. Thesis, Colorado State College, 1943. pp. 66, Pub. No. 625, (C.S. 1943, Vol. V).

The doctrine of the separation of powers with special reference to its application to the delegation of legislative power to educational officials. Blaine Blair Nolan, Ph.D. Thesis, University of Missouri, 1942. pp. 753, Pub. No. 446, (M.A. 1943, Vol. IV, No. 2).

The functional organization of student personnel services at the Northern Illinois State Teachers College. William V. O'Connell, Ed.D. Thesis, Colorado State College, 1943. pp. 94, Pub. No. 624, (C.S. 1943, Vol. V).

The status of the boys' counselor in the senior high schools of southern Illinois. William Neal Phelps, Ed.D. Thesis, Colorado State College, 1943. pp. 63, Pub. No. 623, (C.S. 1943, Vol. V).

EDUCATION

The growth of an educational philosophy supporting a broad form of military training in democratic schools. Aubrey Orlan Pittenger, Ed.D. Thesis, University of Missouri, 1943. pp. 336, Pub. No. 602, (M.A. 1944, Vol. V, No. 2).

The relevancy of the pre-service training of beginning rural teachers to certain teacher activities. Ted Roosevelt Ragsdale, Ph.D. Thesis, St. Louis University, 1942. pp. 185, Pub. No. 611, (M.A. 1944, Vol. V, No. 2).

The relation of scholarship to tenure and salary of high school teachers. Gilbert Oscar Robinson, Ph.D. Thesis, University of Missouri, 1935. pp. 138, Pub. No. 680, (M.A. 1945, Vol. VI, No. 1).

A basis for the selection of course content in elementary science. Martin L. Robertson, Ph.D. Thesis, University of Michigan, 1933. pp. 272, Pub. No. 386, (M.A. 1942, Vol. IV, No. 1).

An analysis of the meaning of averageness in a college aptitude testing program. Mildred Winn Saupe, Ph.D. Thesis, University of Missouri, 1941. pp. 154, Pub. No. 439, (M.A. 1943, Vol. IV, No. 2).

Socio-economic status and knowledge of social usage of freshmen in the one-year curriculum at the Black Hills Teachers College. Field study No. 1. M. O. Skarsten, Ed.D. Thesis, Colorado State College of Education, 1942. pp. 136, Pub. No. 505, (C.S. 1942, Vol. IV).

What can be done in the elementary school to prevent retardation? Ida Townsend Smith, Ed.D. Thesis, Colorado State College, 1941. pp. 187, Pub. No. 400, (C.S. 1941, Vol. III).

The retardation of pupils entering junior high school. Ida Townsend Smith, Ed.D. Thesis, Colorado State College, 1939. pp. 150, Pub. No. 409, (C.S. 1941, Vol. III).

EDUCATION

An experiment in the education of retarded children in the eighth grade. Ida Townsend Smith, Ph.D. Thesis, Colorado State College, 1940. pp. 150, Pub. No. 410, (C.S. 1941, Vol. III).

Financial and departmental study of Texas Wesleyan College. Law Sone, Ed.D. Thesis, Colorado State College, 1940. pp. 68, Pub. No. 397, (C.S. 1941, Vol. III).

The recruitment problem at Texas Wesleyan College. Law Sone, Ed.D. Thesis, Colorado State College, 1943. pp. 79, Pub. No. 622, (C.S., 1943, Vol. V).

A study of sixth-grade pupils' understanding of statements in social studies textbooks. John H. Springman, Ed.D. Thesis, Colorado State College, 1941. pp. 140, Pub. No. 391, (C.S. 1941, Vol. III).

Interscholastic contest practices in public high schools in Missouri. Lauren Andrew Van Dyke, Ph.D. Thesis, University of Missouri, 1941. pp. 280, Pub. No. 450, (M.A. 1943, Vol. IV, No. 2).

The improvement of space perception ability by training. Walter R. Van Voorhis, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 116, Pub. No. 363, (P.S. 1941, Vol. IV).

Economic and leisure activities and their educational relationships in the community. J. T. von Trebra, Ph.D. Thesis, Colorado State College, 1940. pp. 610, Pub. No. 413, (C.S. 1941, Vol. III).

Catholic Indian missionary influence in the development of catholic education in Montana, 1840-1903. Sister Mary Afra White, Ph.D. Thesis, Saint Louis University, 1940. pp. 238, Pub. No. 482, (M.A. 1943, Vol. IV, No. 2).

EDUCATION

Negro liberal arts college deans. A study of the status and duties of deans of instruction in Negro Liberal Arts College in the United States. Matthew J. Whitehead, Ed.D. Thesis, New York University, 1944. pp. 127, Pub. No. 677, (M.A. 1945, Vol. VI, No. 1).

EDUCATION AND PSYCHOLOGY

A study of certain relationships existing between general reading comprehension and reading comprehension in a specific subject-matter area. A. Sterl Artley, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 149, Pub. No. 544, (P.S. 1942, Vol. V).

A consumer education program in practice. Robert A. Bream, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 850, Pub. No. 649, (P.S. 1943, Vol. VI).

Bookkeeping activities of the business office. James Gailey Brigham, Ed.D. Thesis, Pennsylvania State College, 1944. pp. 132, Pub. No. 756, (P.S. 1944, Vol. VII).

Prognosis of freshman academic achievement at the Pennsylvania State College. Irving Coblentz, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 245, Pub. No. 562, (P.S. 1942, Vol. V).

An analysis of health needs as a basis for the reorganization of the health program of John Harris High School. Horace G. Geisel, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 111, Pub. No. 650, (P.S. 1943, Vol. VI).

A comparison of the attitudes of pupils toward offenses against private individuals and the same offenses against corporations. Robert W. Jacks, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 92, Pub. No. 651, (P.S. 1943, Vol. VI).

EDUCATION AND PSYCHOLOGY

A study of relationships among certain pupil adjustments in language situations. Patsy Aloysius Killgallon, Ed.D. Thesis, Pennsylvania State College, 1942. pp. 324, Pub. No. 560, (P.S. 1942, Vol. V).

Certain aspects of delinquency and their relationship to education. LeRoy J. Kline, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 255, Pub. No. 656, (P.S. 1943, Vol. VI).

The Pennsylvania teachers' tenure law as interpreted in the decisions of appeal authorities. Edwin B. Long, Ed.D. Thesis, Pennsylvania State College, 1944. pp. 138, Pub. No. 754, (P.S. 1944, Vol. VII).

A study of student conversation and conversationalists. Eugene T. McDonald, Ed. D. Thesis, Pennsylvania State College, 1942. pp. 131, Pub. No. 561, (P.S. 1942, Vol. V).

The effect of training on verbal ability. Agnes R. McElwee, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 146, Pub. No. 540, (P.S. 1942, Vol. V).

The home and school backgrounds, measured vocational interests, and vocational choices of 869 students who entered the state teachers colleges of Pennsylvania in the fall of 1940. Richard Torrence Parsons, Ed.D. Thesis, Pennsylvania State College, 1942. pp. 155, Pub. No. 539, (P.S. 1942, Vol. V).

A survey of exceptional children in Huntingdon County, their incidence and the distribution of multiple handicaps. Rutherford B. Porter, Ed.D. Thesis, Pennsylvania State College, 1942. pp. 75, Pub. No. 526, (P.S. 1942, Vol. V).

Correctional Education in the Adult State Reformatories. Nelson John Ramsdell, Ed.D. Thesis, Pennsylvania State College, 1944. pp. 145, Pub. No. 757, (P.S. 1944, Vol. VII).

EDUCATION AND PSYCHOLOGY

The origin, development and administration of certain phases of the rural community vocational schools in Pennsylvania. B. Paul Ross, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 181, Pub. No. 652, (P.S. 1943, Vol. VI).

An investigation of the opportunities for employment of girls graduating from the high schools of Illinois, the qualifications essential to success in these types of employment and a procedure by which these qualifications might be developed. Myrtle Ruth Schmalhausen, Ed.D. Thesis, Pennsylvania State College, 1944. pp. 154, Pub. No. 755, (P.S. 1944, Vol. VII).

A study of the desirability of correlating English composition with social studies. Ralph Scrafford, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 219, Pub. No. 653, (P.S. 1943, Vol. VI).

An investigation into the value of certain tests in the selection and upgrading of personnel in aircraft engine and propeller industries. John T. Shuman, Ed.D. Thesis, Pennsylvania State College, 1944. pp. 160, Pub. No. 752, (P.S. 1944, Vol. VII).

The correlation between the intelligence of pupils in grades 7-12 and the shift of their opinion after reading arguments on certain social issues. F. Clark Skelly, Ed.D. Thesis, Pennsylvania State College, 1944. pp. 177, Pub. No. 753, (P.S. 1944, Vol. VII).

The use of certain tests in the prediction of academic success as applied to students of home economics. Isabella Waddell White, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 100, Pub. No. 538, (P.S. 1942, Vol. V).

Case studies of thirty-five junior high school pupils of low intelligence test scores and some evidences of remedial treatment. Clyde R. Uhler, Jr., Ph.D. Thesis,

EDUCATION AND PSYCHOLOGY

Pennsylvania State College, 1943. pp. 174, Pub. No. 654, (P.S. 1943, Vol. VI).

EDUCATION, RURAL

The training of teachers for adult and young farmer instruction in vocational agriculture. William I. DeWees, Ed.D. Thesis, Pennsylvania State College, 1942. pp. 93, Pub. No. 526, (P.S. 1942, Vol. V).

ELECTRICAL ENGINEERING

Current distortion in the end-rings of squirrel-cage induction motors. Richard John Walter Koopman, Ph.D. Thesis, University of Missouri, 1942. pp. 74, Pub. No. 434, (M.A. 1943, Vol. IV, No. 2).

ENGINEERING

Replacement demand for automobile tires. William Robert Spriegel, Ph.D. Thesis, University of Michigan, 1934. pp. 143, Pub. No. 383, (M.A. 1942, Vol. IV, No. 1).

ENGINEERING MECHANICS

The mechanical properties of metals and plastics under sustained vibrations. Benjamin Joseph Lazan, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 122, Pub. No. 567, (P.S. 1942, Vol. V).

ENGLISH

Mediaeval rhetoric in Shakespeare. James Edgar Wade, Ph.D. Thesis, St. Louis University, 1942. pp. 185, Pub. No. 613, (M.A., 1944, Vol. V, No. 2).

ETHICS

Mark Twain's theories of morality. Frank C. Flowers, Ph.D. Thesis, Louisiana State University, 1941. pp. 239, Pub. No. 418, (M.A. 1942, Vol. IV, No. 1).

FINE ARTS

The Mycenaean pictorial style of vase painting in the thirteenth century. Sara Anderson, Ph.D. Thesis, Bryn Mawr College, 1943. pp. 249, Pub. No. 584, (M.A. 1944, Vol. V, No. 2).

FUEL TECHNOLOGY

The preparation, purification and properties of indene and coumarone, and their solvent extraction from coal tar light oils. Joseph Norbert Breston, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 186, Pub. No. 758, (P.S. 1944, Vol. VII).

Destructive hydrogenation of abietic acid. Herbert Beecher Charmbury, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 93, Pub. No. 568, (P.S. 1942, Vol. V).

GEOLOGY

An investigation of the use of heavy minerals in determining the origin and course of profile development in soils. Joseph Fish Haseman, Ph.D. Thesis, University of Missouri, 1944. pp. 180, Pub. No. 687, (M.A. 1945, Vol. VI, No. 1).

The stratigraphy of the western half of the fulton quadrangle. Trusten Edwin Peery, Ph.D. Thesis, University of Missouri, 1940. pp. 185, Pub. No. 468, (M.A. 1943, Vol. IV, No. 2).

Pleistocene glacial deposits and preglacial drainage pattern of northwestern Missouri. Raymond Maxwell Trowbridge, Ph.D. Thesis, University of Missouri, 1938. pp. 93, Pub. No. 461, (M.A. 1943, Vol. IV, No. 2).

GERMAN

James Freeman Clarke, Apostle of German culture to America. John Wesley Thomas, Ph.D. Thesis,

GERMAN

Pennsylvania State College, 1942. pp. 186, Pub. No. 514, (P.S. 1942, Vol. V).

GREEK

The discussion of St. Gregentius Archbishop of Taphar with the Jew Herban. William Thomas Radius, Ph.D. Thesis, University of Michigan, 1939. pp. 277, Pub. No. 607, (M.A. 1944, Vol. V, No. 2).

HISTORY

Oberlin and the anti-slavery movement up to the Civil War. Clayton Sumner Ellsworth, Ph.D. Thesis, Cornell University, 1930. pp. 211, Pub. No. 618, (M.A. 1944, Vol. V, No. 2).

Civitates Liberae under the Roman Republic. Hester Jane Gruber, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 151, Pub. No. 663, (M.A. 1945, Vol. VI, No. 1).

The Helgoland-Zanzibar treaty of 1890. Paul Edgar Hubbell, Ph.D. Thesis, University of Michigan, 1937. pp. 598, Pub. No. 427, (M.A. 1943, Vol. IV, No. 2).

The Roman colony of Salonae. Margaret Glover Moore, Ph.D. Thesis, University of Michigan, 1944. pp. 281, Pub. No. 686, (M.A. 1945, Vol. VI, No. 1).

The mind and art of George Bancroft. Russel B. Nye, Ph.D. Thesis, University of Wisconsin. pp. 336, Pub. No. 333, (M.A. 1942, Vol. IV, No. 1).

The anti-clerical activities of the forty-eighters in Wisconsin 1848-1860, a study in German-American Liberalism. Sister M. Hedwigis Overmoehle, Ph.D. Thesis, Saint Louis University, 1941. pp. 377, Pub. No. 484, (M.A. 1943, Vol. IV, No. 2).

HISTORY

The development of nationalism in India 1885-1920. Cornelia Munz Paustian, Ph.D. Thesis. University of Missouri, 1942. pp. 313, Pub. No. 601, (M.A. 1944, Vol. V, No. 2).

Francis Parkman and the spiritual factors at work in New France. Sister Mary Purissima Reilly, O.P. Ph.D. Thesis, St. Louis University, 1942. pp. 381, Pub. No. 610, (M.A. 1944, Vol. V, No. 2).

The Jacobean Oath of Allegiance and English Catholics. Clarence James Ryan, S.J., Ph.D. Thesis, Saint Louis University, 1941. pp. 359, Pub. No. 485, (M.A. 1943, Vol. IV, No. 2).

The Diego Ramirez Visita. Walter V. Scholes, Ph.D. Thesis, University of Michigan, 1943. pp. 217, Pub. No. 582, (M.A. 1943, Vol. V, No. 1).

HISTORY, AMERICAN

The liquor traffic among the aborigines of the new Northwest 1800-1860. Joseph Peter Donnelly, S.J., Ph.D. Thesis, Saint Louis University, 1940. pp. 323, Pub. No. 480, (M.A. 1943, Vol. IV, No. 2).

HISTORY, MODERN

The relations between British Columbia and the Dominion of Canada. 1871-1885. Margaret A. Ormsby, Ph.D. Thesis, Bryn Mawr College, 1937. pp. 281, Pub. No. 682, (M.A. 1945, Vol. VI, No. 1).

HOME ECONOMICS

A study of the changes in strength and in certain chemical properties of textile fabrics during an accelerated aging treatment. Esther Naomi Chapman, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 193, Pub. No. 350, (P.S. 1941, Vol. IV).

HOME ECONOMICS

An analysis of some anthropometric data. Arista McCormick Francis, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 99, Pub. No. 513, (P.S. 1942, Vol. V).

A study of the relationship between the construction and durability of viscose rayon fabric. Elizabeth Douglass Roseberry, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 57, Pub. No. 367, (P.S. 1941, Vol. IV).

A study of the effects of laundering and dry-cleaning on the physical properties of twenty-seven blankets. Hazel Tharp Stevens, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 195, Pub. No. 759, (P.S. 1944, Vol. VII).

HORTICULTURE

The application of micro-methods to the determination of nitrogen, phosphorus and potassium in leaf tissue. Robert H. Cotton, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 204, Pub. No. 760, (P.S. 1944, Vol. VII).

Influence of height and frequency of cutting upon the growth of smooth brome grass, orchard grass, and Kentucky bluegrass. Charles Worth Hodgson, Ph.D. Thesis, Michigan State College, 1941. pp. 20, Pub. No. 414, (M.A. 1942, Vol. IV, No. 1).

Influence of orchard soil management on the infiltration of water and some related physical characteristics of the soil. Lai-yung Li, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 116, Pub. No. 354, (P.S. 1941, Vol. IV).

An investigation of the mineral nutrition of the strawberry. George Carl Schowengerdt, Ph.D. Thesis, University of Missouri, 1944. pp. 117, Pub. No. 688, (M.A. 1945, Vol. VI, No. 1).

HORTICULTURE

Anatomical development of the skin of pomaceous fruits with special reference to spray residue removal. Seth Thomas Shaw, Ph.D. Thesis, University of Missouri, 1940. pp. 111, Pub. No. 467, (M.A. 1943, Vol. IV, No. 2).

INDUSTRIAL EDUCATION

The organization, content, and teaching of general industrial arts in selected American secondary schools. Robert Borri, Ed.D. Thesis, Pennsylvania State College, 1942. pp. 193, Pub. No. 535, (P.S. 1942, Vol. V).

A state plan for subsidizing vocational education in Pennsylvania. Herbert H. Gruber, Ed.D. Thesis, Pennsylvania State College, 1942. pp. 193, Pub. No. 528, (P.S. 1942, Vol. V).

An analysis and evaluation of certain common functional training characteristics of teacher preparation in industrial arts. Stanley J. Pawelek, Ed.D. Thesis, Pennsylvania State College, 1941. pp. 153, Pub. No. 378, (P.S. 1941, Vol. IV).

Objectives and problems of industrial education in negro colleges. Bridges Alfred Turner, Ed.D. Thesis, Pennsylvania State College, 1941. pp. 157, Pub. No. 359, (P.S. 1941, Vol. IV).

The development and contemporary problems of vocational education in Puerto Rico. Francisco C. Urgell, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 306, Pub. No. 530, (P.S. 1942, Vol. V).

LANGUAGE, ENGLISH

Samuel Johnson and the authoritarian principle in linguistic criticism. Harold Byron Allen, Ph.D. Thesis, University of Michigan, 1941. pp. 456, Pub. No. 381, (M.A. 1942, Vol. IV, No. 1).

LANGUAGE, ENGLISH

Public lectures in New York, 1851-1878: a cultural index of the times. Robert J. Greef, Ph.D. Thesis, University of Chicago, 1941. pp. 242, Pub. No. 420, (M.A. 1942, Vol. IV, No. 1).

LANGUAGES, LATIN

A study of the Latinity of Narratio Restaurationis Abbatiae sancti martini tornacensis, by Hermann of Tournai. Richard Eugene Arnold, S.J., Ph.D. Thesis, Saint Louis University, 1936. pp. 254, Pub. No. 473, (M.A. 1943, Vol. IV, No. 2).

Sancti Aelredi De Spiritali Amicitia Libri Tres: Introduction, text, translation, and commentary. Sister Mary Eugenia Laker, Ph.D. Thesis, Saint Louis University, 1941. pp. 350, Pub. No. 487, (M.A. 1943, Vol. IV, No. 2).

LITERATURE

The decline of tragedy in the early nineteenth century. George E. Grauel, Ph.D. Thesis, Saint Louis University, 1938. pp. 488, Pub. No. 476, (M.A. 1943, Vol. IV, No. 2).

A reinterpretation of the Roman de la Rose: a study in Chaucerian background. Alan Murray Finlay Gunn, Ph.D. Thesis, Princeton University, 1938. pp. 725, Pub. No. 443, (M.A. 1943, Vol. IV, No. 2).

LITERATURE, AMERICAN

A biographical study of Hamlin Garland from 1860 to 1895. Eldon Cleon Hill, Ph.D. Thesis, Ohio State University, 1940. pp. 307, Pub. No. 419, (M.A. 1942, Vol. IV, No. 1).

The functions of setting in the American short story of local color, 1865-1900. Robert Rhode, Ph.D. Thesis,

LITERATURE, AMERICAN

University of Texas, 1940. pp. 438, Pub. No. 332, (M.A. 1942, Vol. IV, No. 1).

Censure of majority rule as a theme in American literature 1787-1853. Robert Goyer Waler, Ph.D. Thesis, University of Michigan, 1942. pp. 545, Pub. No. 457, (M.A. 1943, Vol. IV, No. 2).

Main currents of regional literature in the lower Middle West from 1870 to 1927. Jean Elsie Taylor, Ph.D. Thesis, University of Missouri, 1928. pp. 352, Pub. No. 657, (M.A. 1945, Vol. VI, No. 1).

LITERATURE, ANGLO-SAXON

Some philosophical and admonitory poems in the Exeter book. Helen Storm Corsa, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 141, Pub. 684, (M.A. 1945, Vol. VI, No. 1).

LITERATURE, ENGLISH

Spenser and the emblem writers. Sister Mary Louise Beutner, Ph.D. Thesis, Saint Louis University, 1941. pp. 427, Pub. No. 483, (M.A. 1943, Vol. IV, No. 2).

The Knight of Malta by John Fletcher, Philip Massinger, and Nathan Field: Edited with Introduction and Notes. Marianne Brock, Ph.D. Thesis, Bryn Mawr College, 1944. pp. 258, Pub. No. 675, (M.A. 1945, Vol. VI, No. 1).

British literary men's opinions about America. 1750-1832. Joseph Jay Jones, Ph.D. Thesis, Stanford University, 1934. pp. 271, Pub. No. 681, (M.A. 1945, Vol. VI, No. 1).

Early Tudor Drama and Old Greek Comedy: A study of didactic and satiric drama. Katherine Lever, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 316, Pub. No. 674, (M.A. 1945, Vol. VI, No. 1).

LITERATURE, ENGLISH

A bibliography of pedagogy in English fiction, 1750-1825. Lynwood S. Lingenfelter, Ed.D. Thesis, Pennsylvania State College, 1941. pp. 791, Pub. No. 343, (P.S. 1941, Vol. IV).

Edwin Percy Whipple--a biography (1819-1886) Leishman Arnold Peacock, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 382, Pub. No. 566, (P.S. 1942, Vol.V).

A Critical Textual Study of Beaumont and Fletcher's THE MAID'S TRAGEDY. Donald Gale Stillman, Ph.D. Thesis, University of Michigan, 1942. pp. 318, Pub. No. 506, (M.A. 1942, Vol. V, No. 1).

Inns and taverns and English literature 1558-1642. Vivian Ryan Sutton, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 223, Pub. No. 669, (M.A. 1945, Vol. VI, No. 1).

The religion of William Cowper. Adelaide Eve Thein, Ph.D. Thesis, University of Michigan, 1940. pp. 482, Pub. No. 577, (M.A. 1940, Vol. V, No. 1).

LITERATURE, FRENCH

A critical study of the composition of Sodome et Gomorrhe by Marcel Proust. Grace B. Dolowitz, Ph.D. Thesis, Bryn Mawr College, 1943. pp. 304, Pub. No. 658, (M.A. 1945, Vol. VI, No. 1).

Lettres Sur Le Caractere et les Ouvrages de J.-J. Rousseau. William George Merhab, Ph.D. Thesis, University of Michigan, 1942. pp. 504, Pub. No. 491, (M.A. 1942, Vol. V, No. 1).

LITERATURE, GERMAN

Heine's leadership of "Young German" critically tested by comparison of his "Weltanschauung" with that of Karl Ferdinand Gutzkow. Edward Elias, Ph.D. Thesis,

LITERATURE, GERMAN

University of Michigan, 1932. pp. 183, Pub. No. 492, (M.A. 1932, Vol. V, No. 1).

LITERATURE, GREEK

Biographical patterns of folklore and morality in Herodotus' history. Mabel Lang, Ph.D. Thesis, Bryn Mawr College, 1943. pp. 307, Pub. No. 659, (M.A. 1945, Vol. VI, No. 1).

Pindar's handling of ethical problems raised by traditional mythology. Elizabeth Wyckoff, Ph.D. Thesis, Bryn Mawr College, 1941. pp. 117, Pub. No. 678, (M.A. 1945, Vol. VI, No. 1).

LITERATURE, ITALIAN

Vincenzo Monti in the light of Italian Romanticism. Grazia Avitabile, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 193, Pub. No. 685, (M.A. 1945, Vol. VI, No. 1).

The Madrigal in France to the end of the 17th century. Catherine Fehrer, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 202, Pub. No. 690, (M.A. 1945, Vol. VI, No. 1).

LITERATURE, SPANISH

A Study of Treason in the Spanish Ballads. Richard Eugene Chandler, Ph.D. Thesis, University of Missouri, 1940. pp. 367, Pub. No. 578, (M.A. 1940, Vol. V, No. 1).

The Proletarian Element in the Works of Perez Galdos. John Frank Davis, Ph.D. Thesis, University of Missouri, 1939. pp. 186, Pub. No. 489, (M.A. 1939, Vol. V, No. 1).

LITERATURE, SPANISH

The Social Philosophy of Fernan Caballero. Howard Merle Farnsworth, Ph.D. Thesis, University of Missouri, 1942. pp. 295, Pub. No. 490, (M. A. 1942, Vol. V, No. 1).

MATHEMATICS

Some geometric aspects of linear transformations. Theodore E. Raiford, Ph.D. Thesis, University of Michigan, 1932. pp. 27, Pub. No. 382, (M.A. 1942, Vol. IV, No. 1).

On systems of linear equations in hilbert space with n parameters. Vera Ames Widder, Ph.D. Thesis, Bryn Mawr College, 1944. pp. 31, Pub. No. 670, (M.A. 1945, Vol. VI, No. 1).

METALLURGY

The influence of small additions of a third element upon the critical cooling velocity of a pure iron-carbon alloy. William Gardner Van Note, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 172, Pub. No. 362, (P.S. 1941, Vol. IV).

MINEROLOGY

Study of the wetting of calcite. Frederick W. Albaugh, Ph.D. Thesis, University of Michigan, 1941. pp. 161, Pub. No. 334, (M.A. 1942, Vol. IV, No. 1).

PETROLEUM AND NATURAL GAS

The construction of an infra-red spectrometer and its application to the measurement of water vapor in fuel gases and in air. Charles C. Haworth, Jr., Ph.D. Thesis, Pennsylvania State College, 1942. pp. 170, Pub. No. 511, (P.S. 1942, Vol. V).

PETROLEUM AND NATURAL GAS ENGINEERING

An investigation of the displacement of oil by water in a porous medium. Joseph Samuel Levine, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 144, Pub. No. 349, (P.S. 1941, Vol. IV).

PHILOSOPHY

The Baconian mind in early nineteenth century America. Bernard Baum, Ph.D. Thesis, University of Michigan, 1942. pp. 618, Pub. No. 453, (M.A. 1943, Vol. IV, No. 2).

The distinction between the primordial and consequent natures of God in the philosophy of Professor Alfred North Whitehead. Cornelius M. DeBoe, Ph.D. Thesis, Princeton University, 1939. pp. 225, Pub. No. 571, (M.A. 1939, Vol. V, No. 1).

The concrete universal as a logical principle. Wm. Vander Lugt, Ph.D. Thesis, University of Michigan, 1932. pp. 117, Pub. No. 445, (M.A. 1943, Vol. IV, No. 2).

PHOTOGRAPHY

The influence of pressure on the formation of the latent photographic image, particularly its effect on reversal in the region of solarization. Karl A. Maring, S.J., Ph.D. Thesis, Saint Louis University, 1932. pp. 53, Pub. No. 472, (M.A. 1943, Vol. IV, No. 2).

PHYSICAL EDUCATION

The relationship between certain phases of kinesthesia and performance during the early stages of acquiring two perceptuo-motor skills. Bernath Eugene Phillips, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 124, Pub. No. 377, (P.S. 1941, Vol. IV).

PHYSICS

The Vacuum Hot-Spark Spectra of Silver and Copper in the Extreme Ultra-Violet Region. Norman C. Beese, Ph.D. Thesis, University of Michigan, 1926. pp. 75, Pub. No. 494, (M.A. 1926, Vol. V, No. 1).

Transitions in binary alloys of iron, cobalt and nickel. Frederick Dewey Bennett, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 42, Pub. No. 357, (P.S. 1941, Vol. IV).

An X-ray study of the phase changes in thin film in the copper-zinc system. Arthur A. Burr, Ph.D. Thesis, Pennsylvania State College, 1943. pp. 42, Pub. No. 655, (P.S. 1943, Vol. VI).

Supersonic measurements in carbon dioxide, helium, and carbon tetrafluoride. Walter Hayden Byers, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 36, Pub. No. 529, (P.S. 1942, Vol. V).

The method of thin films for the study of intermetallic diffusion and chemical reactions at metallic surfaces. Howard S. Coleman, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 49, Pub. No. 525, (P.S. 1942, Vol. V).

Directional radiation measurements of aircraft antennas. George Louis Haller, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 27, Pub. No. 524, (P.S. 1942, Vol. V).

The velocity and absorption of sound in gases. Howard Cecil Hardy, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 58, Pub. No. 347, (P.S. 1941, Vol. IV).

An X-ray study of the effect of high hydrostatic pressures on the perfection of crystals. Louis Rosen, Ph.D. Thesis, Pennsylvania State College, 1944. pp. 209, Pub. No. 761, (P.S. 1944, Vol. VII).

PHYSICS

The qualitative and quantitative analysis of some hydrocarbons using the Raman effect. Robert Wallace Scott, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 108, Pub. No. 523, (P.S. 1942, Vol. V).

The construction of an atomic beam apparatus and its use for the measurement of collision cross section and the van der Waals constant for potassium atoms. Paul Francis Spremulli, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 53, Pub. No. 543, (P.S. 1942, Vol. V).

Supersonic measurements in carbon dioxide methane, and propylene. David Telfair, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 52, Pub. No. 371, (P.S. 1941, Vol. IV).

An X-ray study of the time-rate of precipitation from a solid solution of cu in al. Charles H. Townes, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 27, Pub. No. 509, (P.S. 1942, Vol. V).

The apparent equilibrium of the alpha and gamma phases of pure iron. Robert S. Wehner, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 62, Pub. No. 522, (P.S. 1942, Vol. V).

POLITICAL ECONOMY

A study of the connection between diplomacy and international finance. William Manson Hager, Ph.D. Thesis, University of Missouri, 1943. pp. 309, Pub. No. 598, (M.A. 1944, Vol. V, No. 2).

English government finance during the reign of Richard III 1482-1485. Julia Ward, Ph.D. Thesis, Bryn Mawr College, 1943. pp. 229, Pub. No. 592, (M.A. 1944, Vol. V, No. 2).

POLITICAL SCIENCE

The theory of social contract in England: 1642-52. George Lawrence Abernethy, Ph.D. Thesis, University of Michigan, 1936. pp. 135, Pub. No. 388, (M.A. 1942, Vol. IV, No. 1).

Horace Greeley: Whig or Socialist? Leo Brophy, Ph.D. Thesis, Fordham University, 1939. pp. 144, Pub. No. 389, (M.A. 1942, Vol. IV, No. 1).

The government of Berlin, a study in metropolitan federalism. Rowland Andrews Egger, Ph.D. Thesis, University of Michigan, 1933. pp. 390, Pub. No. 336, (M.A. 1942, Vol. IV, No. 1).

The implementation of the Monroe Doctrine. Melvin Henry Arthur Laatsch, Ph.D. Thesis, Princeton University, 1942. pp. 336, Pub. No. 451, (M.A. 1943, Vol. IV, No. 2).

POULTRY HUSBANDRY

Vitamin investigations in turkey poult and chick nutrition. Homer Patrick, Ph.D. Thesis, Pennsylvania State College, 1942. pp. 89, Pub. No. 512, (P.S. 1942, Vol. V).

PSYCHOLOGY

Ability patterns of engineers and success in engineering school. Charles H. Goodman, Ph.D. Thesis, Pennsylvania State College, 1941. pp. 91, Pub. No. 345, (P.S. 1941, Vol. IV).

Probability in the relationship between instances and generalizations. Vsevolod L. Skitsky, Ph.D. Thesis, University of Michigan, 1942. pp. 188, Pub. No. 422, (M.A. 1942, Vol. IV, No. 1).

PUBLIC HEALTH

A study of the administrative control of whooping cough in Grand Rapids. John Leonard Lavan, Dr. Ph.D. Thesis, University of Michigan, 1942. pp. 89, Pub. No. 466, (M.A. 1943, Vol. IV, No. 2).

RELIGION

Voltaire, the Examen and analyse. E. Judson Humeston, Jr., Ph.D. Thesis, Princeton University, 1942. pp. 232, Pub. No. 442, (M.A. 1943, Vol. IV, No. 2).

The "polyglot" Arabic text of Zechariah--a comparative and critical study. Stephen M. Reynolds, Ph.D. Thesis, Princeton University, 1939. pp. 83, Pub. No. 456, (M.A. 1943, Vol. IV, No. 2).

SOCIOLOGY

The English country gentry: a survey with special reference to their social code. Paolo Enrico Coletta, Ph.D. Thesis, University of Missouri, 1942. pp. 432, Pub. No. 447, (M.A. 1943, Vol. IV, No. 2).

The American colony in Mexico city. Ethelyn Clara Davis, Ph.D. Thesis, University of Missouri, 1942. pp. 320, Pub. No. 464, (M.A. 1943, Vol. IV, No. 2).

Subjective factors of delinquent conduct: an adaption of "own story" and interview method to the diagnosis and rehabilitation of delinquent boys. Ralph Aloysius Gallagher, S.J., Ph.D. Thesis, Saint Louis University, 1932. pp. 328, Pub. No. 471, (M.A. 1943, Vol. IV, No. 2).

County Public Welfare Work in Missouri. George Albert Gemmell, Ph.D. Thesis, University of Missouri, 1930. pp. 276, Pub. No. 580, (M.A. 1930, Vol. V, No. 1).

Family support in public assistance--A study of New York law and agency practice in New York City. Harriet L. Goldberg, Ph.D. Thesis, Bryn Mawr College, 1942. pp. 261, Pub. No. 588, (M.A. 1944, Vol. V, No. 2).

SOCIOLOGY

Some Suggestions for a teacher retirement system for Missouri. Heber Ulric Hunt, Ph.D. Thesis, University of Missouri, 1939. pp. 564, Pub. No. 579, (M.A. 1939, Vol. V, No. 1).

The development of a technique for evaluating the organization of diocesan Catholic social institutions. Weltha M. Kelly, Ph.D. Thesis, Saint Louis University, 1937. pp. 339, Pub. No. 474, (M.A. 1943, Vol. IV, No. 2).

The growth and development of group hospitalization in the United States. James Tull Richardson, Ph.D. Thesis, University of Missouri, 1943. pp. 278, Pub. No. 603, (M.A. 1944, Vol. V, No. 2).

The ecological distribution of talented persons in the United States. Arthur Hapton Robertson, Ph.D. Thesis, University of Michigan, 1933. pp. 131, Pub. No. 438, (M.A. 1943, Vol. IV, No. 2).

Community organization for child welfare Montgomery County, Pennsylvania. Ann W. Shyne, Ph.D. Thesis, Bryn Mawr College, 1943. pp. 426, Pub. No. 662, (M. A. 1945, Vol. VI, No. 1).

Treatment of life insurance problems by social agencies dealing with dependent families. Flora L. Slocum, Ph.D. Thesis, Saint Louis University, 1937. pp. 613, Pub. No. 475, (M.A. 1943, Vol. IV, No. 2).

ZOOLOGY

Seasonal and experimentally induced changes in the reproductive tract of the female bat *myotis grisescens*. Jane Colburn Belcher, Ph.D. Thesis, University of Missouri, 1940. pp. 184, Pub. No. 440, (M.A. 1943, Vol. IV, No. 2).

The comparative effects of crude and refined *crotalus atrox* venom upon the circulating blood cells of

ZOOLOGY

certain mammals. Karl Bleyl, Ph.D. Thesis, University of Michigan, 1942. pp. 108, Pub. No. 673, (M.A. 1945, Vol. VI, No. 1).

Alterations in the blood, and in the water, fat, and chloride content of tissues during dehydration in the dog. Benjamin DeBoer, Ph.D. Thesis, University of Missouri, 1942. pp. 193, Pub. No. 448, (M.A. 1943, Vol. IV, No. 2).

Embryonic development and adult morphology of blood and blood-forming organs in the frog, Rana pipiens. Paul H. Ralph, Ph.D. Thesis, University of Michigan, 1942. pp. 291, Pub. 459, (M.A. 1943, Vol. IV, No.2).

Periodicity of spontaneous change of form of pelmato-hydra oligactis under varying physiological conditions. Rev. Raymond Hugo Reis, S.J., Ph.D. Thesis, Saint Louis University, 1940. pp. 209, Pub. No. 481, (M.A. 1943, Vol. IV, No. 2).